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The conflict in the coastal area of Sines (Portugal): Elements for settlement through dialogue^{*}

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ABSTRACT

Conflicts frequently emerge in border areas between population and industry, often located in coastal regions. The municipality of Sines, in Portugal, with cultural traditions connected to the sea and fishing activities, is a paradigmatic case where this problem has existed for decades. Knowing that dialogue has provided good results in settling neighbourhood conflicts, a study was conducted to characterise its environmental and social aspects and thus contribute to the knowledge of the factors that influence individual attitudes towards the environment, aiming to establish dialogue platforms and environment integration between the population and industry in Sines.

A holistic study was carried out, together with a survey of two convenience samples composed of key social players from the local population and industry. Although the obtained results do not confirm any clear situation of pollution in Sines area, it was however found that there exists a conflict between the local population and neighbouring industry, associated with the presence of the port and the industrial site and the resulting hazards for the environment and public health.

In this context, it is noted that social space has a modelling effect on individual behaviour, and physical proximity is the main factor in the perception of the risk by local key players from Sines population. It was also noted that the surveyed companies have been integrating principles of social responsibility in their management policies, mainly due to media pressure on the industrial activity, but also due to the environmental accidents which had previously occurred within the area.

This study, although exploratory, shows the willingness of the social players in Sines to cooperate in protecting the environment and public health, with benefits resulting from that cooperation. This allows to anticipate success in settling the conflict in Sines through dialogue. There were identified the following fundamental elements to the implementation of dialogue platforms:

- i) Dissemination of environmental information promotes public participation,
- ii) Risk perception is influenced by the physical proximity of the sources of environmental and public health degradation, and
- iii) People exclusion from the decision-making processes causes a breach of trust towards those responsible for environmental management.

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It is concluded that dialogue contributes to the prevention and settlement of conflicts between the population and industry, which usually occur in environmentally sensitive areas such as the coastal regions, through environmental integration and the building of trust at the local level, thus obtaining more solid and legitimate solutions for coastal management project concerns.

Keywords: risk, public participation, perception, citizenship.

RESUMO

O conflito na zona costeira de Sines (Portugal): elementos para a resolução através do diálogo

Conflitos acontecem frequentemente em áreas de fronteira entre populações e indústria, muitas vezes localizadas em zonas costeiras. O município de Sines, em Portugal, de tradições culturais ligadas ao mar e às atividades piscatórias, é um caso paradigmático onde este problema se faz sentir desde há décadas. Sabendo-se que o diálogo tem demonstrado bons resultados na resolução de conflitos de vizinhança, procurou-se caracterizar os aspetos ambientais e sociais envolventes, de forma a contribuir para o conhecimento dos fatores que condicionam os comportamentos individuais em matéria de ambiente, tendo em vista a implementação de plataformas de diálogo e a integração ambiental entre a população e a indústria de Sines.

Realizou-se um estudo de caso holístico complementado por um inquérito aplicado a duas amostras de conveniência, constituídas por atores sociais chave da população e da indústria local. Embora os resultados obtidos não evidenciem uma clara situação de poluição na região de Sines, constata-se porém que existe um caso de conflito que opõe a população à indústria vizinha, que se associa à presença do complexo portuário e industrial, e aos riscos que daí resultam para o ambiente e a saúde pública.

Neste contexto, verifica-se que o espaço social tem um efeito modelador das atitudes individuais, e que a proximidade física é o principal fator para a construção da perceção de risco pelos atores sociais locais. Verifica-se igualmente que as empresas inquiridas têm vindo a integrar nas suas políticas de gestão princípios de responsabilidade social, muito pela pressão mediática que se exerce sobre a atividade industrial, mas também pelos acidentes ambientais anteriormente ocorridos na região.

Este trabalho, embora exploratório, vem demonstrar a disponibilidade dos atores sociais de Sines para a colaboração na proteção do ambiente e da saúde pública, resultando até benefícios dessa colaboração, o que permite antecipar o sucesso na resolução do conflito em Sines através do diálogo. Foram identificados elementos fundamentais para a implementação de plataformas de diálogo:

- i) a divulgação de informação ambiental promove a mobilização das pessoas para a participação pública,*
- ii) a perceção do risco é influenciada pela proximidade física aos fatores de degradação ambiental e da saúde pública, e*
- iii) o afastamento das pessoas dos processos de tomada de decisão causa quebras de confiança nos responsáveis pela gestão ambiental.*

Conclui-se que o diálogo contribui para a prevenção e resolução de conflitos, que opõem as populações à atividade industrial e que usualmente ocorrem em áreas ambientalmente sensíveis como são as zonas costeiras, pela integração ambiental e pela construção de laços de confiança à escala local, obtendo-se assim soluções mais robustas e mais legítimas em projetos de gestão litoral.

Palavras-chave: risco, participação pública, perceção, cidadania.

1. Introduction

Industrial activity has always associated pollutant emissions, a cause of environmental impacts (Brito *et al.*, 2011). In cases of proximity to population centres, these impacts often contribute to popular unrest, often escalating into conflict situations (Schüpphaus, 2007). Sines, an old fishing town (Correia, 2008), located on the west coast of Portugal (figure 1) is a paradigmatic example of a conflict area, where the population is opposed to neighbouring industry.

Practically kept in its natural state until then, the construction of the harbour and the industrial complex at Sines coastal area in the early seventies (Soledade, 1999), and the relocation of the local fishing port and subsequent uninstallation of the fishing fleet, started a fast industrial and population growth (CMS, 2014) which changed forever the lives of the people in Sines (Pacheco, 1999). Since then, protests against the dete-

rioration of local marine resources and air quality have become common (CMS, 2014).

In these cases, experience has shown that the neighbourly relationships between population and industry can be improved through dialogue (Schüpphaus, 2007). However, according to Andrade and Schiavetti (2015), the settlement of social-environmental conflicts is a complex task, since they are surrounded by a “constellation of independent factors” (Lewin, 2004), requiring that their analysis should be done case by case (Torre, 2015).

It is also known that the surrounding social space has a modelling effect in individual behaviour (Ávila & Castro, 2002), influencing each person to adjust to rules of conduct which they, at each moment, perceive as socially correct (Cameron, 2005). On what constitutes risk, people build their own perceptions (Nunes, 2000) by means of a complex network of psychological, social

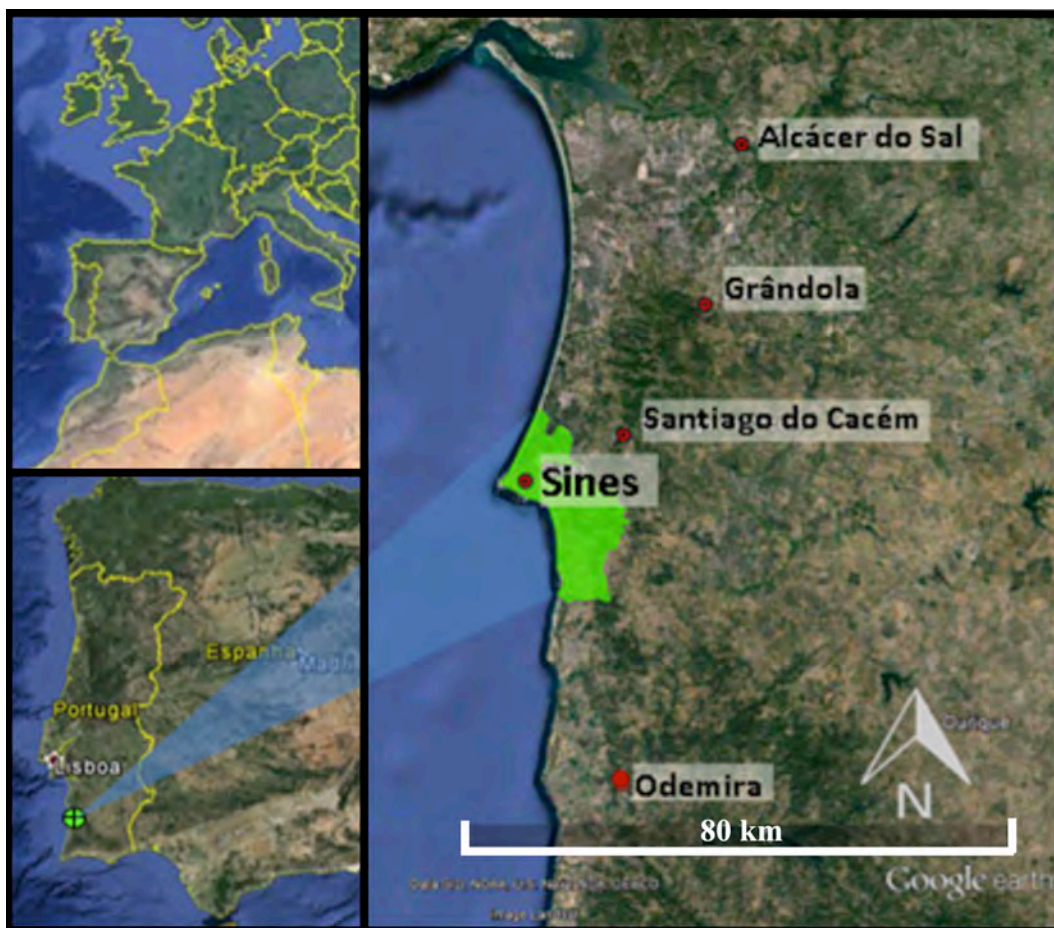


Figure 1 - Location of the city of Sines, Portugal (source: Google Earth).

Figura 1 - Localização do município de Sines, Portugal (fonte: Google Earth).

and cultural factors (Lima, 1995), conditioned by their own capacity for understanding (Filho *et al.*, 2010). According to Drucker (2012), risk perception-building is conditioned by what one knows, perceived as a loss resulting from some event (Flynn & Slovic, 2000), where the media (Balle, 2003) has also an important part (Schmidt, 2008).

On the other hand, since the fifties, the growing deterioration of environmental conditions, and people's awareness of it together with higher media coverage of environmental accidents (Mendes & Seixas, 2005), has lead companies to search for new action strategies (Mascarenhas & Costa, 2011). More than a simple attempt to turn "green" activities with a "bad reputation", as the chemical industry and energy production (Porter & Kramer, 2006), companies are integrating people's concerns into their management policies (Freeman, 2010), and adopting principles of sustainable management, assuring this way their competitiveness (Rondinelli & Berry, 2000).

Since these problems are mostly felt locally (Pinto, 2006), this study addresses the conflict in the Sines coastal area, and the elements which condition the availability for dialogue of local population and industries on what concerns environment and human

health protection, being justified by their social aspects and also by the environmental fragility characterising the coastal systems with a heavy industrial presence (Lourenço & Asmus, 2015). This study also systematises behaviours that allow preventing and anticipating situations of potential conflict, aiming to promote environmental citizenship and sustainable development.

2. Material and methodology

2.1. Methodological framework

In the social sciences, according to Lewin (2004), research should start by analysing the issue as a whole, and from there the detail for each particular aspect, thus keeping oriented to the initially set goals. The analysis model adopted (figure 2) is based on a hypothetical-deductive empiric research model of the reasons for the conflict in Sines, and the influences and rationalities that determine each person's behaviour in respect to the environment (Quivy & Campenhoudt, 1995).

2.2. Case study

A holistic case study (Yin, 2006) was carried out, spreading the research field to the surrounding environmental and social aspects in order to answer the "how" and "why" questions (Yin, 2001) to the exist



Figure 2: Analysis Model - Factors that influence the availability for dialogue of Sines population and industry.

Figura 2: Modelo de análise - Fatores que mais influenciam a disponibilidade da população e da indústria de Sines para o diálogo.

ence of conflict within the Sines area. Information was collected using as resources documentary analysis, direct observation, and consulting data bases available on online institutional sites, using triangulation of data whenever possible (Sousa & Baptista, 2011). Special attention was paid to conservation of the information in order to avoid interpretation bias resulting from subjective epistemological meanings of the author (Carmo & Ferreira, 2008).

2.3. Social Players Survey

This case study was complemented with two direct questionnaire surveys (Quivy & Campenhoudt, 1995) to identify the elements conditioning the willingness to engage in dialogue, applied to non-probabilistic convenience samples (Carmo & Ferreira, 2008), which were composed of key players, drawn from both the local population and the industry of Sines (Barnett, 2002).

Key players from Sines population

A panel of 55 social players was selected from associations and non-governmental agencies registered in the municipality of Sines [Support Information I], which, by their role and social standing, sharing values and objectives, become opinion centres for their community (Freixo, 2012). Although small, this sample (Carmo & Ferreira, 2008) allowed the understanding and interpretation of meanings in specific social and cultural contexts, becoming representative of the Sines population and their willingness to cooperate with the surrounding industry in protecting the environment and human health (Sousa & Baptista, 2011).

The questionnaire [Support Information II] was adapted from surveys carried out both nationally and within Europe, under the scope of the Observa (Almeida, 2004;

Gonçalves, 2007) and Eurobarómetro (EC, 2010; EC, 2011) programmes, according with the interests of this study. The goal was to describe the environmental attitudes and perceptions of the population of Sines and their relationship with local industry. The survey was tested (Sousa & Baptista, 2011) and carried out between May and August 2014 with a success rate of 58%, with no events during this period that could affect the results of this research. The answers to the survey [Support Information VI] were validated (Quivy & Campenhoudt, 1995), having been accepted all received questionnaires. The collected data were compiled in contingency tables and graphic representations (Reis, 2008), avoiding transcription errors (Sousa & Baptista, 2011).

Key players of Sines industry

According to the INE [National Statistics Institute] (2014), in 2011 there were 1,435 companies based in Sines. 4.9% of these were working in the energy and transformation sectors and had contributed that year 44% of the total business volume, employing 16% of the active population in the municipality. A panel of eight companies was chosen [Support Information III], which, due to their size and activity, represents the critical social and environmental aspects of industry in Sines (Freixo, 2012). Although limited, this panel (Carmo & Ferreira, 2008) characterises the universe of companies in Sines and their availability to cooperate with the local population in protecting the environment and human health (Sousa & Baptista, 2011). The questionnaire [Support Information IV] was devised in keeping with the goals of this study, to describe the policies, and the public communication methods of the companies, as well as their motivations to integrate public consultation into their management practices. The questionnaire was tested (Sousa & Baptista, 2011) and carried out between December 2013 and January 2014, with a success rate of 50% and with no events during this period that could affect the results of this research. The *corpus* of the analysis [Support Information V] was composed from the received questionnaire replies (Quivy & Campenhoudt, 1995).

Statistical processing

To describe the degree of association between the predictive factors of the study variables, the non-parametric statistical Spearman rank-order correlation coefficient (r_s) (Equation 1) was applied to the closed answers (ordinal scales) (Reis, 2008; Heiman, 2011). In this way it is attempted to describe the type and strength of the relationship between the elements under analysis (Heiman, 2011).

$$r_s = 1 - \frac{6 \sum d^2}{N(N^2 - 1)}$$

Content analysis

To derive a description of the policies and external communication models adopted by the surveyed companies, content analysis techniques were applied, following the criteria for thematic and frequency categorisation proposed by Bardin (2011), in terms of comprehensiveness and significance (Vala, 1989). Given the small number of responses significance intensity were not considered (Vala, 1989).

3. Case Study

The municipality of Sines

The municipality of Sines includes the parishes of Sines and Porto Covo and is located in the coastal area of Alentejo, district of Setúbal, occupying an area of 202.7 sq. Km. In 2011 it had a population of 14,238 inhabitants and 5,621 family households (INE, 2014). Although it is traditionally associated with maritime activities, agriculture also plays a significant role in the traditions and culture of the Sines (Soledade, 1999).

It can be stated that the social tensions in Sines starts with the construction of the harbour and industrial sites in 1973, a process in which the population was neither consulted nor involved in, and that deeply changed the local way of life (Pacheco, 1999). But it is during the eighties that this tension reaches its pick due to a series of accidents in the region (Nunes & Matias, 2003), mainly the explosion of the oil tanker *Campeón* on August 15, 1980; the oil spill by the oil tanker *Marão* on

July 14, 1989; and the oil slick caused by the dumping of ballast water by *The Ogennitor* on May 5, 1990.

The population of Sines has, since then, showed a high concern about environmental issues, both by creating partnerships and by participating in street protests in defence of the environment. On May 28, 1982, the fishermen of Sines interrupted their activities and boycotted the activity of the industrial port (CMS, 2014), and on June 8 of the same year the first “green strike” occurs in Portugal, stopping all economic activity in the city of Sines (Pacheco, 1999). In November, 1995, the local fishermen once again interrupted their activity as a way of protesting against the degradation of fishing resources occurring within the region (Pacheco, 1999).

The harbour and industrial complex in Sines presently occupies an area of over 3,000 ha, hemming the urban area (figure 3). It includes a petrochemical plant, a crude oil refinery and a coal-fired power plant.

Environment quality in Sines

According to the environmental data available for the Sines region (Table 1), the quality of the surface waters mostly presents low levels of pollution (SNIRH, 2014). Concerning the quality of groundwater, eleven (11) measurements were carried out between 2007 and 2012 showing changes of the natural values in six (6) different parameters (SNIRH, 2014). On the quality of the coastal and transition waters, which have been monitored since 2008, the results for the whole Sines area present maximum quality (SNIRH, 2014).



Figure 3 - Complex of Sines - Implementation of port and industrial areas (source: Google Earth).

Figura 3 - Complexo de Sines - Implantação das áreas portuária e industrial (fonte: Google Earth).

Table 1 - Quality of surface water in Ribeira de Moinhos (26D/50), in Sines, in the period between 2009 and 2013, according to the SNIRH data (2014).

Tabela 1 - Qualidade da água superficial na estação de Ribeira de Moinhos (26D/50), em Sines, no período de compreendido entre 2009 e 2012, de acordo com os dados do SNIRH (2014).

		RIBEIRA DE MOINHOS (26D/50)						
		Ammoniacal nitrogen (mg/l NH ₄)	CBO (5 days) (mg/l)	CQO (mg/l)	Total Phosphate (mg/l PO ₄)	Total Nitrate (mg/l NO ₃)	Dissolved Oxygen (field) (%)	pH (field) (Sr)
31-03-2009		0,1	3	10,0	-	6,7	52	7,6
22-02-2010		0,49	5	45,4	-	2,0	-	7,2
15-12-2010		0,04	7	51,0	-	2,0	101	8,4
11-03-2013		0,41	3	21,0	0,071	4,1	48	-
13-06-2013		0,08	3	11,0	0,031	13,0	37	-
28-08-2013		0,29	3	16,0	0,031	6,3	39	-
A1	MVR	0,05	3	-	0,4	25	70	6,5-8,5
	MVA	-	-	-	-	50	-	-
A2	MVR	1	5	-	0,7	-	50	5,5-9,0
	MVA	1,5	-	-	-	50	-	-
A3	MVR	2	7	30	0,7	-	30	5,5-9,0
	MVA	4	-	-	-	50	-	-

MVR - Maximum value recommended

O > MVA

MVA – Maximum value admissible

● > MVR

As far as the quality of the air is concerned (Figure 4) the obtained results show, in general, a classification of “good” (APA, 2014). However, the issue of air quality in Sines became relevant during 2011 and 2012, when several episodes of a stench occurred, 657 complaints having been filed between January 2012 and October 2014 (CMS, 2014).

Health and society

The region of Sines has also been submitted to several studies on human and social health. In 2003, the SINESBIOAR project (Nave & Fonseca, 2004) aimed to understand:

- How the population evaluates the industrial complex and the risks to human health, and
- The variables influencing the perception of those risks.

The obtained results reveal that the individual perception of the risk increases with the physical proximity to the complex. On the other hand, it is also verified that the low levels of environmental information within the region boosts fears and uncertainties, stressing the concerns of the people about the presence of the industrial sites and the resulting health risks (Nave & Fonseca, 2012).

In 2012, the results obtained from the GISA project (Nave & Fonseca, 2012) to evaluate the quality of the air in the Alentejo coast and the risks to public health, showed there was a positive statistical association, although moderate, between the quality of the air and the low birth weight of the children born between 2007 and 2010, having been exposed during pregnancy to tobacco smoke (Ribeiro *et al.*, 2012).

In this field, and according to the data of INE (2015), the children born between 1995 and 2013 in Sines and near-by municipalities present birth weights lower than the national average during this period, with a frequency of 95% of lower weights for Sines municipality (figure 5).

Considering the results of this case study in the municipality of Sines, although changes of the natural conditions have been registered in the near past, it cannot be stated that there is indeed a pollution case within the region. This suggests that the causes of conflict in Sines are related to perceived social and cultural issues than with the environment. The construction of the harbour and industrial complex in the area, in which the population was not involved, that enforced a sudden change of the traditional way of life of the Sines population, might have influenced their attitude against the causes of that

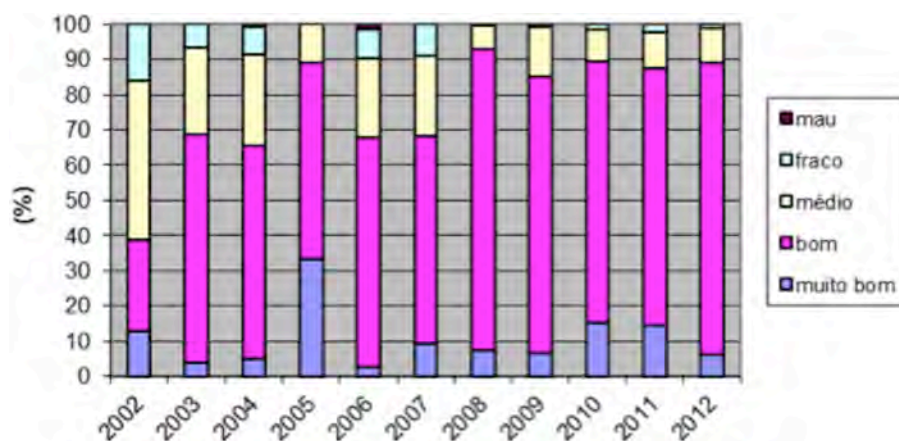


Figure 4 - Air quality in Sines in the period 2002-2012, according to the QualAr data (2014).

Figura 4 - Qualidade do ar em Sines no período 2002-2012, de acordo com os dados da QualAr (2014).

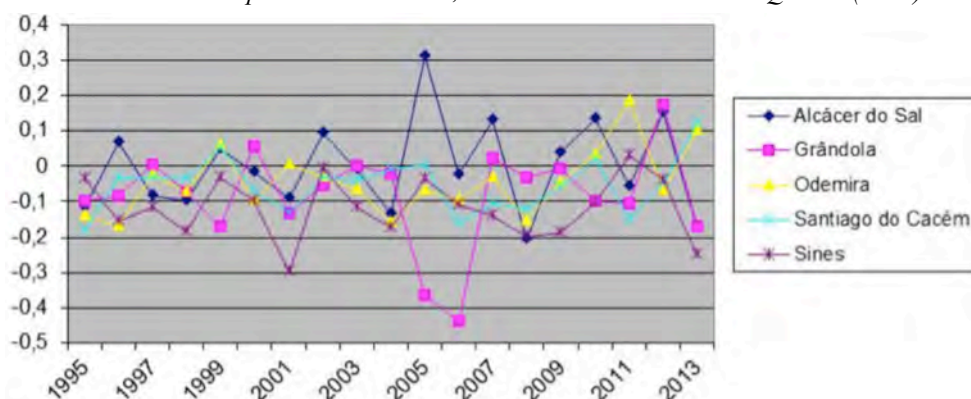


Figure 5 - Difference in average birth weight of children born in the municipalities of Sines relative to the national average, in the 1995-2013 period, according to the INE data (2014).

Figura 5 - Diferença dos pesos médios à nascença das crianças nascidas nos concelhos de Sines no período de 1995 a 2013, de acordo com os dados do INE (2014).

change, represented by the neighbouring industry (Correia, 2008).

On the other hand, the social and public health studies which were carried out, show the concerns of the people towards the proximity of the Sines complex, and the resulting hazards for their health and safety, being exacerbated by the lack of available information (Nave & Fonseca, 2012). Although not quantified, these studies show the existence of a real danger to public health, resulting from local environmental factors related to the industrial activity (Augusto *et al.*, 2012).

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4. Results and discussion

4.1. Key players from the Sines population

Environmental behaviour

Questioned about those day-to-day subjects that most arouse their interest, as a way to evaluate their capacity to engage in environmental participation, it was found that the respondents are generally interested in environmental issues (100%), as well as in new scientific and technological discoveries (97%). According to Torre (2014), a higher physical and cognitive proximity raises people's awareness and sensibilities, with a corresponding acquisition of practices and values (Pinto, 2004).

About their direct involvement (Table 2), the respondents are available to participate in environmental actions, even more than at national level, regarding the results obtained in 2002 (Nave, 2004). They were, however, identified barriers to a more effective participation, such as the lack of time or opportunity (67%), suggesting a certain incapacity or disclaimer of the respondents in protecting the environment (Castro, 2004).

Table 2 - The involvement in environmental issues found in the population survey of Sines (2014) and in the II Inquérito Observa (2002).

Tabela 2 - O envolvimento nos assuntos do ambiente encontrado no inquérito à população de Sines (2014) e no II Inquérito Observa (2002).

	Survey to the population of Sines (2014)	II Observa Inquiry (2002)
Attended a public meeting on environment	84%	16%
Signed a petition or participated in a street protest	81%	19%
Contributed money to an environmental group	31%	69%
Participated in an event promoted by an environmental organisation	69%	31%

These results show a strong positive correlation between individual interests in daily life and their involvement in environmental issues [$r_s(32) = +0,992$; $p < 0,001$]. Being individual behaviours influenced by social conduct norms (Lewin, 2004), these results reveal the commitment of the respondents to environmental issues, suggesting that a higher disclosure and dissemination of scientific information (Torre, 2014) encourages and enhances public participation (Vasconcelos, 2006).

Risk perception

Knowing that fears and uncertainties may cause potential environmental conflicts (Beck, 2015), the respondents were questioned about the environmental problems existing within the Sines area, in such a way as to discern their perceptions of the surrounding environmental risks. The results show a clear association of risk with the environmental aspects which are uppermost in the minds of the respondents (Nave & Fonseca, 2004), such as smoke emissions from factory chimneys (66%), disposal of toxic waste in the ground (47%), sewer discharge on the beach (47%), and oil slicks (41%).

The main concerns among the respondents are also anthropogenic and associated to industrial activities, such

as diseases caused by air pollution, industrial hazards and soil contamination by industrial waste (Table 3). In 2002, at the national level, the main concerns of the Portuguese were water and food contamination, as well as forest fires (Delicado, 2007).

Table 3 - Environmental concerns found on the population of Sines survey (2014) and the II Inquérito Observa (2002).

Tabela 3: Preocupações ambientais encontradas no inquérito à população de Sines (2014) e o II inquérito Observa (2002).

	Survey to Sines population (2014)	II Observa Inquiry (2002)
Diseases by air pollution	88%	62%
Industrial hazard	88%	43%
Industrial waste contamination	75%	52%
Contamination of tap water	72%	75%
Food contamination	69%	66%
Oil slicks	69%	42%
Earthquakes	38%	31%
Forest fires	31%	69%
Floods caused by natural phenomenon	25%	29%

There is also a strong positive association between those believed to be the main causes of environmental degradation, industrial activity (100%) and big multinational companies (97%), and the most potential environmental threats within the region [$r_s(32) = +0,999$; $p < 0,001$].

These results reveal an important concern of the respondents with environment and health, which is enhanced by the presence of the industrial sector in the daily lives of the population of Sines (Nave & Fonseca, 2004), thus confirming that the people who live closer to big industrial undertakings tend to stress the environmental risks more strongly (Langlois, 2012; Che *et al.*, 2013).

Principles and values

Regarding to accountability, the respondents show low trust in the institutions responsible for environmental management (Table 4), *i.e.* the State and the Companies. In this field, was noted trust in the regional public institutions and local authorities, as well as in the health professionals and scientific experts. The results now obtained, naturally reflect the social and local circumstances of the Sines area, where the proximity to the regional institutions is stronger. In the case of the media, there is a perceived high breach of trust compared to the national results of 2002 (Schmidt *et al.*,

2004), due to the critical thinking and higher environmental maturity of the Sines population (Torre, 2014), where this issues are a constant in the daily routine of the people.

Table 4 - Trust in sources of information about environment found in the population of Sines survey (2014), on the II Observa Inquiry (2002) and on Eurobarometer (2002).

Tabela 4 - Confiança nas fontes de informação quando se trata de assuntos do ambiente encontrada no inquérito à população de Sines (2014), no II inquérito Observa (2002), e no Eurobarómetro (2002).

	Survey to Sines population (2014)	II Observa Inquiry (2002)	Eurobarometer (2002)
Scientists and scientific experts	81%	65%	40%
Health professionals and doctors	91%	70%	-
Environment and consumer organisations	78%	65%	37%
Local authorities	84%	49%	8%
European institutions	69%	44%	9%
Media	59%	75%	29%
National government	47%	61%	7%
Industrial organisations	25%	21%	3%

It should be noted that the present social and economic circumstances also have a strong influence on individual behaviour, often translated into dissatisfaction, and the blaming of government institutions (Schmidt, 2008).

The results now obtained reveal a strong positive association between the value assigned to environment protection (100%), the lack of institutional trust in the national government [$r_s(32) = +0,976$; $p < 0,001$], and the industrial organisations, [$r_s(32) = +0,965$; $p < 0,001$]. This may be due to the lack of environmental information (Alves *et al.* 2012) published in the Sines region (Nave & Fonseca, 2012), and people being excluded from the decision-making processes concerning the environment (Felt, 2000; Schmidt *et al.*, 2004). Even so, it is expected that the people in charge of environmental protection fulfil their duty to assure that protection (Lima & Schmidt, 1996).

4.2. Key players of Sines industry

Corporate policy

In order to make a description of the effective availability of the companies (latent contents) to enter into dialogue with the local population, the policies and motivations (explicit contents) for the adopted external

communication process were addressed, having been defined three analysis dimensions (Bardin, 2011): (1) Emotional; (2) Instrumental; and (3) Ethics.

1) The emotional dimension refers to the motivation to communicate, as an intention or will to communicate, although without any effective physical action. Either by principle or because they are required to (Rondinelli & Berry, 2000), the respondent companies recognise that there are benefits arising from implementing processes to engage with the local population:

“collect information on their concerns and interests” (Company #1); “the environment certification granted in 2001 and the registration in EMAS in 2010 [...] imply this motivation” (Company #2); “abiding to the legal requirements and Company decisions” (Company #3); “a population [...] supporter and enthusiastic about the proactive role of the company in the local economy and development”, “assure the satisfaction of all stakeholders”, “security and environment are two of the priorities [...] minimizing the environmental impact of the activity” (Company #4).

The respondent companies are, however, reluctant to adopt these type of mechanisms, what is probably due to the bad image created around the industry (Schmidt, 2000), and for fear of being exposed to public opinion (Freeman, 2010). This issue, together with popular mistrust, due to former accidents in the region, many times exaggerated by the media (Schmidt, 2000), as well as the lack of knowledge from the people, form barriers for companies to enter into dialogue with the local population. However, this negative and adverse image of industrial activity seems to be changing:

“has no knowledge of the activity and performance in what concerns environment and human health risks”, “normally associates local industry has being highly pollutant” (Company #1); “situations on environmental hazards occurred within the Sines area” (Company #2); “consider that the activities being carried out were dangerous and could put at risk the local communities”, “I feel that they can understand better the incidents which occur” (Company #3); “the success [...] in what concerns security levels might have transmitted an image of credibility and seriousness” (Company #4).

The absence of negative elements is noted, whether opposition or denial, concerning the implementation of external communication processes. This unanimity reflects the social maturity and availability of the respondent companies to be involved with population in dialogue.

2) The instrumental dimension of external communication is reflected in the company’s practices, mainly with

reference to the adopted dialogue models (Rondinelli & Berry, 2000). The obtained results show that, more than available, the respondent companies have already adopted and implemented communication processes oriented to dialogue with the local population, e.g. open door events for schools and other guests:

“emphasis of the contact with the local population and their representatives”, “regular visits to the premises”, “the visit and contact with the premises, the industrial process, the environmental and safety issues” (Company #2); “In this type of event the company shows its premises and products”, “organizes open door events for its workers’ families, friends and representatives of the local community” (Company #3); “the delivery of specific products [and] match the actions and messages to each one”, “involving the stakeholders, namely the general population, is part of the [company] communication principles” (Company #4).

It was verified that for the respondent companies, the motivations for effective communication (Rondinelli & Berry, 2000) are to promote their corporate image, assure the longevity of the company, and to improve activity performance. The dialogue with the population gives credibility to the corporations (Freeman, 2010), and allows returns concerning, for example, negative impacts not previewed (Rondinelli & Berry, 2000):

“inform about the work of the company so that the population is enlightened” (Company #1); “hear the opinions and concerns of those surrounding us”, (Company #2); “through information [...] remove the fear from the population”, “since they don’t have the necessary knowledge, they see it with mistrust and fear” (Company #3); “the perception of environmental impact [...] favours the predisposition of the local population to understand and take action in case of emergency”, “an informed population [...] is a facilitator population” (Company #4).

3) The ethics dimension refers to communication as an expression of social corporate responsibility (Rondinelli

& Berry, 2000), leading to a more interventionist action in the community (Schmidt, 2008). This way, the external communication processes are the means to spread the environmental culture among the population:

“assure that communication reaches the population in a clear and understandable language” (Company #1); “fundamental for a culture of total transparency and proximity” (Company #2); “the communication we send to the representatives of the community [...] allows to build trust” (Company #3); “becoming an active and decision-making member in the evolution of the community, characterised by the presence of industry”, “sustainability is the bonding concept of the fundamental messages from [the company] (Company #4).

External communication models

So that the fundamental elements for establishing dialogue could be identified, the respondent companies were questioned about the external communication models they adopted when aiming at dialogue with the population.

At an organisational level it is verified that dialogue becomes effective with the operationalization of the means and mechanisms necessary to implement the processes of external communication, having to be defined:

- A policy of transparency and commitment;
- Specialised technical skills;
- Specific information content, and
- Characterization of the audience.

However, there are risks in its implementation, which might result in a breach of trust in the process. These risks may arise from an inadequate process or communication failure by the corporation, the use of information in an exaggerated way, or even due to bad faith on the part of the public using this processes.

As for the communication components (Sousa, 2010), it is noted that for the respondent companies it is the population that should start the dialogue, posing the focus of the speech on the receiver (Figure 6). This

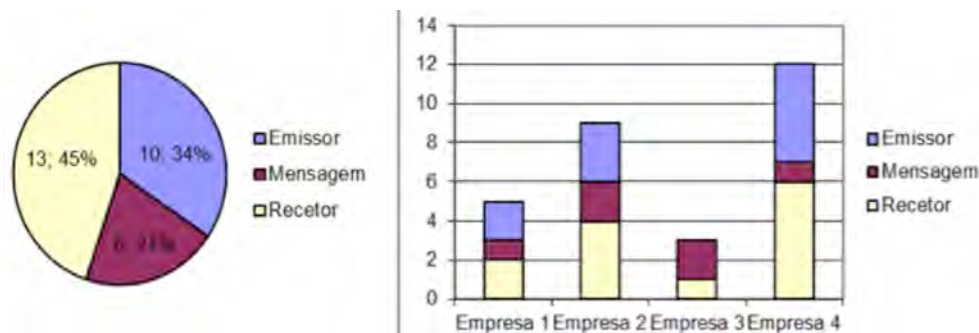


Figure 6 - Distribution of communication components.

Figura 6 - Distribuição das componentes da comunicação.

underlines the reluctance of companies to be publically exposed (Freeman, 2010), suggesting that something has to happen to encourage them to assume a more collaborative role in the community.

4.3 Dialogue platforms

As referred to earlier, coastal systems are, by nature, environmentally fragile (Lourenço & Asmus, 2015) and, as mentioned by Andrade and Schiavetti (2015), they are often the arena for conflicts where different interests tend to collide. On the other hand, industry also prefers to be in coastal areas, mainly due to the easy access to sea routes. Thus the presence of port facilities is fundamental, as it is in Sines (CMS, 2014).

This study confirms that the close interaction between people and industry (Che *et al.*, 2012; Huang *et al.*, 2012) causes both environment and social conflicts (Schüpphaus, 2007). Nevertheless, although considering that the conflict in Sines is a reality caused by the industrial activity and air pollution (figure 7), the respondents are available to cooperate with industry to protect the environment and public health, even considering such cooperation advantageous for the population (69%), either through the involvement of people (41%), or for achieving a better environment (24%).

In turn, the survey results obtained from the industry's key players show the availability of the respondent companies for dialogue with the local population, although their motivation is essentially instrumental (figure 8), *i.e.* the corporations' communication practices

are motivated by the utility principle (Freeman, 2010), which is to promote the corporate image, assure the future of the company, and to improve the performance of their activities (Rondinelli & Berry, 2000).

However, there are possible barriers to the implementation of dialogue platforms (Vasconcelos *et al.*, 2009), relating mainly to the lack of time or opportunity of the population, or a fear of exposure to public opinion on the part of the industry. This reinforces the importance that external environmental mediation may have in settling local conflicts (Farrel & Weaver, 2000), acting as a facilitator of discussion, and promoting cooperative understanding through dialogue (Schüpphaus, 2007).

In this field, the regional and local administrative authorities, as they are closer and hence can better understand the local reality (Santinhos *et al.*, 2014), may play an important part in the environmental integration of population and industry, by establishing platforms of plural and integrating dialogue (Alves *et al.*, 2012), and in this way positively influence responsible environmental management.

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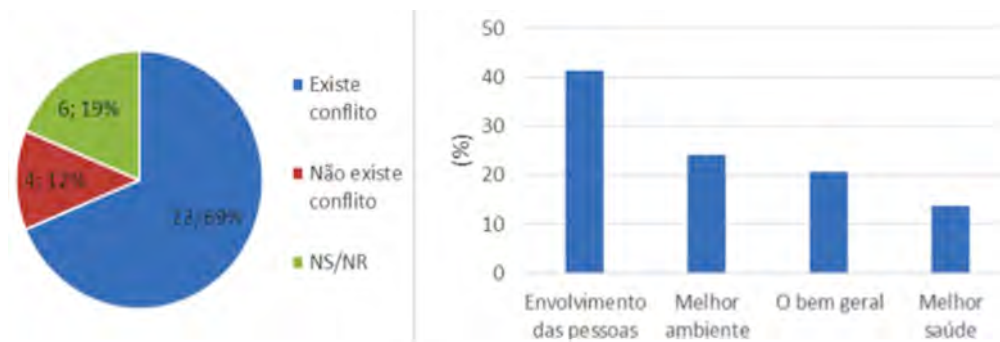


Figure 7 - The environmental conflict in Sines and the reasons for its existence.

Figura 7 - O conflito ambiental em Sines e as razões para a sua existência.

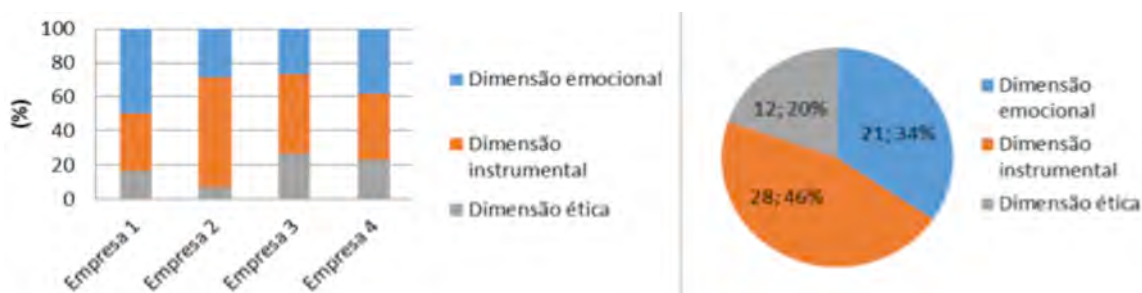


Figure 8 - Dimensional analysis of external communication policy.

Figura 8 - Análise dimensional da política de comunicação externa.

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5. Solution proposals and future works

The collected environmental data do not show a clear situation of pollution in Sines area, therefore the causes of conflict between the population and the industrial activity may result from social and cultural reasons (Correia, 2008), more than from degradation in the quality of the environment itself. To this it should be added the fact that the building of the port and industrial complex in Sines has been imposed without the population taking part in the process (Vasconcelos, 2006). It is thus important to carry on the study of the reasons that led to the conflict in Sines, and of the causes that originated and sustain it (Schüpphaus, 2007), thereby, contributing to an understanding of the neighbourhood conflicts involving population and industry.

Nevertheless, due to the episodes of modification in the natural conditions within the Sines area, it is fundamental to carry on, in the long term and broad-ranging, environmental and public health studies, to identify and describe local environmental characteristics, which are justified by the presence of the industrial complexes in Sines (Nave & Fonseca, 2004), and the environmental fragility of costal systems (Lourenço & Asmus, 2015).

Because fears and uncertainties result from a lack of information, and cause gaps between the real performance of companies and people's perceptions of the risks to environment and human health (Rondinelli & Berry, 2000), it is necessary to create and develop a standard system of responsible self-regulation, based, for instance, on norm ISO 19600:2014 (ISO, 2014), which will ensure on one hand the trust of the population in environmental protection, and on the other an incentive for a wider involvement of corporations within the community (Schmidt, 2008).

Since the settlement of conflicts involving a population and industry can be achieved through clear and effective communication of the risks to the environment and public health, and by the participation of the people in the decision-making processes (Vasconcelos, 2009), it is important to carry out an action program to the promotion of social dialogue in Sines (Alves *et al.*, 2012), with the involvement of local authorities (Santinhos *et al.*, 2014), thus contributing to a better neighbourly relationship between the people and the industrial activity, and also by introducing new ways for local governance (Vasconcelos *et al.*, 2006).

6. Conclusions

Knowing that the neighbourly relationship between population and industry may be improved through dialogue, this study intends to contribute to the knowledge of the factors which condition the individual behaviours in what concerns the environment. The results show the availability of the key players, both from the population and the industry of Sines, to cooperate in the protection of the environment and public health, which allows to foresee the success in settling the conflict in Sines through dialogue.

Since the lack of knowledge causes fears and uncertainties as well as enhancing conflict, it is fundamental to create trustworthy communication channels that can inform the population of the relevant information, so that they can make their own decisions in an informed and conscious way. To bring the scientific speech closer to the people allows for more effective citizenship, thus creating new opportunities for local governance, where the agreed solutions become more legitimate and thus more efficacious.

The industrial organisations also have an important role to increase the environmental culture of the population, promoting environmental citizenship and sustainable development. Using their technical and scientific knowledge, acquired daily through their activity, the corporations have the opportunity to transform that information into knowledge, and, as social partners, share it with the community.

On the other hand, the physical proximity of industry is confirmed as the main factor in shaping the perception of risk. Because environmental problems are mostly felt locally, so it is also locally that the institutions are better prepared to address these kind of issues. In this field, involving the people in the decision-making processes is fundamental for the prevention of, and devising of solutions to, social and environmental conflicts.

It is thus concluded that construction of any industrial project in a coastal area, where the industry is side by side with population, must take into account the involvement of people in the decision-making processes, and local authorities to establish public dialogue, aiming to establish dialogue platforms and environment integration between the population and industry in Sines

Appendix

Supporting Information associated with this article is available online at http://www.aprh.pt/rgci/pdf/rgci-675_Barroqueiro_Supporting-Information.pdf

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