Community Perceptions of Local Enterprises in Environmentally Degraded Areas

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Abstract

Local enterprises can play a key role in the economic development of communities in which they are situated but simultaneously, they are often a contributor to negative impacts on the natural environment. Several studies have highlighted the importance of Corporate Social Responsibility (CSR) activities in order to strike a balance between socio-economic and environmental impacts in such communities. However, there is very limited literature exploring community perceptions of local businesses. We consider this to be a key topic as such information can be used in order to develop socio-economic and environmental policies based on the principles of sustainable development. In this paper, the results of an empirical study examining local community perceptions of business activities are presented and also perceptions regarding the contribution of firms, through CSR actions, to environmental quality restoration. The empirical study was conducted in communities located in the environmentally degraded area of the Asopos river in Greece.

Keywords: Corporate Social Responsibility (CSR), citizens' perception, sustainable development, water quality

1. Introduction

Firms are often responsible for environmental degradation issues such as biodiversity loss, soil degradation, ozone depletion, global warming and decreasing water quality (Capelle-Blancard and Laguna, 2010; Ercolano, Gaeta and Romano, 2014; Frank et al., 2016; Ogwu, 2016; Shrivastava, 1995a; Ercolano, 2014). It has been supported that even SMEs, which may have a lower impact on the natural environment due to their size, are also responsible for over 70% of environmental pollution incidents (Adekola et al., 2016; Hillary, 2004; Pineiro Chousa, Tamazian and Vadlamannati, 2017). This responsibility for environmental problems has lead different groups of local or global stakeholders to express their concerns regarding business operations. These concerns vary according to the sector in which firms operate (e.g. the mining industry) and the status of the area in which

they are located (e.g. environmental degraded area, industrial zone). Stakeholders often focus on certain sectors such as the mining, chemical or oil industries due to the high health and financial risks linked with their establishment and operations. Evidence has been identified in the literature regarding the relationship of industrial environmental accidents and health and safety problems of local communities, such as the Bophal chemical accident, Three Mile Island and the Chernobyl disaster (Hoffman, 1999). The severity of an environmental accident on the economic position of a firm, the whole sector and the local communities has a critical influence on the attitudes of stakeholders towards the business (Sy and Tinker, 2013; Zyglidopoulos, 2001). Rationally, the financial sector (the banking sector, stock exchange and investors) pays greater attention to the effects of environmental accidents and future environmental regulations on their financial position (e.g. the ability of firms to repay loans), while local communities demand better quality of life and an improved natural environment (McDermott et al., 2014).

Focusing on local communities, there is significant evidence of conflicts occurring between local residents and firms causing environmental problems. This is more obvious in the extractive industry where protests from local communities are influenced by previous experiences of large scale accidents and the level of pollution in local natural resources (Harvey, 2014; Kitula, 2006). This is especially important in areas affected by river contamination due to industrial activities, making the improvement of water quality essential in order to provide multiple benefits for local communities (Halkos & Matsiori, 2014). To avoid such tensions and gain local "license to operate", firms can implement certain CSR activities in order to incorporate environmental and social concerns into mainstream management processes (Malovics et al., 2008; Shrivastava, 1995b). The relevant literature indicates numerous CSR activities focusing on different internal and external financial, environmental and social issues (Hall and Jeanneret, 2015; Moon, 2007). For example, the triple-bottom-line approach (economic, environmental and social factors) and the internal-external-orientation of CSR activities has been a central policy of the European Commission in the past two decades as part of its' efforts to encourage European firms to operate in a more socially responsible manner and to contribute to sustainable development (EC, 2001). It is encouraging that previous studies have indicated a positive relationship between CSR activities and the economic, environmental and social performance of firms (Szekely and Knirsch, 2005; Torugsa et al., 2012).

An important topic examined in this field is how CSR activities can assist in resolving conflicts between stakeholders and contribute to rewarding firms with better CSR performance. A large number of studies have focused on the level of consumer trust of CSR (Kim, Hur and Yeo, 2015) activities, the socially responsible behavior of investors (Cordeiro and Tewari, 2015), the reaction of local communities to business operations and the

engagement of NGOs in corporate strategic management (Dawkins and Lewis, 2003). Literature on consumers includes studies examining the preferences and willingness of consumers to pay a premium for products produced following sustainable principles (Vlachos et al., 2009; Grebitus et al., 2016; Vasileiou and Georgantzis, 2015). Costaldo et al. (2009) highlight that consumers demonstrate greater confidence in firms undertaking CSR activities and adopting ethical codes. Ethical consumerism underlines the social and environmental impacts of local firms, involving buying from businesses whose strategies are ethical and boycotting those whose behaviour seems unethical, especially for issues related to working conditions (Brown, 2015), the natural environment (Tingchi Liu et al., 2014), gender equality (Jones et al., 2017), racial discrimination and human rights (Mc Gregor and Smit, 2017). Some studies have also examined the ethical parameters involved in investment decisions (ie. selecting a portfolio with ethically and socially responsible firms) (Sparkes and Cowton, 2004). Additionally, shareholder activism and collaboration in CSR activities with NGOs demonstrates the preference of investors for socially responsible firms (Guay et al., 2004; Jonker and Nijhof, 2006). Finally, other studies explore the requests of local communities for certain CSR activities, mainly in relation to the mining industry, ensuring health and safety and a good quality of the natural environment in their local area (Imbun, 2007). Such studies examine the behavior of different groups of stakeholders regarding CSR activities and can be classified into two major categories: firstly, those that emphasize how stakeholder groups play a critical role in businesses adapting CSR activities (Batres-Perez et al., 2012) and secondly, those which explore how different groups of stakeholders react to CSR activities (Lee and Shin, 2010). Research on the second aspect is limited, especially when focusing on perceptions of local communities regarding CSR activities.

This paper aims to contribute to this literature by examining local community perceptions regarding the activities of local firms in environmentally degraded areas where a decline in economic growth has also been observed and the economic position of residents has gradually deteriorated. A significant focus of the paper will also be on describing factors explaining the perceptions of citizens. In order to explore the above issues, the results of an empirical study, implemented in the Asopos river area of Greece, are presented. The specific case study was selected as it includes communities which have experienced significant environmental degradation in the past decades mainly due to high polluting industries in the nearby area. As a result, significant socio-economic and environmental impacts have developed for local communities and conflicts have emerged between locals and the businesses. In the next section, we will discuss the main theoretical framework on which the empirical study was designed and in the third part, the main research techniques used will be explained. This is followed by a detailed presentation of the results of the study. In the final sections, the main findings and the contribution of the paper will be highlighted.

2. Theoretical background

Corporate responsibility towards society is not a new concept. It originates from the 1929 stock market crash where businesses and the financial sector were considered responsible for the ensuing economic hardships of society. In 1932, Berle and Dodd advocated that the business community has two major goals -to increase shareholder wealth and to provide society with specific services (Okoye, 2009). The popularity of CSR was enhanced by the seminal book of Bowen (1953), *'The Social Responsibility of the Businessman'* where the ethical role of the businessman in market and society was underlined. Many other academic studies have had a critical role in the development of the debate around corporate social responsibility extending the scope of firms by incorporating some significant topics into their processes and management, not only for shareholders (Friedman, 1970) but also for stakeholder needs (Russo and Perrini, 2010; Zhu, Sun and Leung, 2014). These include additional legislative, ethical and philanthropic responsibilities in addition to their economic obligations (Carroll, 1991), for strategic management issues (Branco and Rodrigues, 2006; Rupp et al., 2015) and for achieving triple bottom line goals (Elkington, 1997).

Another significant body of literature highlights the relationship of investors and CSR activities (McLachlan and Garner, 2004). In these studies, the proposed methodologies aim to assist investors in evaluating the socially and environmentally responsible behavior of firms in order to suitably adapt their investment decisions (Basso and Funari, 2014; Rubio and Vasquez, 2016). They identify three major types of behavior, namely ethically-oriented investors (Traore, 2016) and socially-risk adverse investors or socially-profit seeking investors (Bansal and DesJardine, 2014). The former category is motivated by ethical (positive or negative screening) criteria to invest in a firm (e.g. avoiding investments in the alcohol and tobacco industries or promoting investments in philanthropic and social enterprises). The latter includes investors who prefer to focus on socially responsible organizations in order to protect their investment from future financial risks (e.g. environmental accidents) or to exploit new opportunities from socially responsible firms (e.g. investing in the Dow Jones Sustainable Group Index).

Despite these significant developments in the literature, limited academic work has focused on linking perceptions of local communities and CSR activities. The limited studies that exist mainly explore conflicts occurring between local communities and businesses, especially in the extractive sector (Imbun, 2007; Bansal and DesJardine, 2014). An indicative example is the studies by Zhang and Moffat (2014) who conducted several surveys

exploring the attitudes of citizens regarding the extractive processes of the mining industry. According to their findings, public trust has been affected by impacts of the mining industry on social infrastructure (e.g. positive impacts include local employment and training programs while negative impacts comprise those on social services and any deterioration in residents' health), existing links between the local community and the mining industry, and the level of engagement of local people in decision making. Despite the limited evidence, several factors can be expected to influence community perceptions of local businesses, such as the current environmental status of the area where the businesses are located (Behr, Eisenhauer and Stedman, 2013) and the level of place attachment of the residents to the area (Manzo and Devine-Wright, 2013). Public awareness of environmental problems (Gifford and Nilsson, 2014) is another important factor influencing perceptions regarding businesses, as it affects attitudes and skills among members of the local community and other stakeholders (Frank et al., 2017). The economic relationship between firms and communities can influence local perceptions for enterprises especially considering their impact on employment rates (Beltran, 2016). As regards demographic factors, previous studies have revealed that educational level is a significant parameter as those with higher education tend to be more aware of environmental issues (Chawla and Cushing, 2007; Read et al., 1994). Furthermore, younger people are expected to have a greater level of environmental awareness (Stragham and Robberts, 1999), as age is an key factor affecting the tendency to be environmentally responsible and influencing environmental attitudes (Liobikiene and Juknys, 2016). Finally, although some studies exploring the impact of gender are inconclusive (Dietz et al., 1998; Han et al., 2011), there is evidence that women, with high levels of environmental awareness, have greater pro-environmental behavior compared to men (Weber et al., 2014).

In this context, a social survey implemented in an industrial area of Greece focusing on two main issues is presented: a) local community perceptions and awareness of local enterprises and related CSR activities and b) factors explaining these perceptions focusing in particular on environmental awareness and demographics. These two research questions are important as local communities can be a driving force for firms to undertake CSR activities as several of them implement CSR activities to gain legitimacy from communities and as prior to the development of any public policy and CSR strategy.

3. Methods

3.1 Research Area

In order to explore the above issues, an empirical study was conducted through the distribution of structured questionnaires in the Asopos river area in Greece. The river is situated in East Central Greece with a length of approximately 57km emptying into the Evoikos Bay near the area of Oropos. The river crosses one of the main motorways of Greece linking the two largest cities of the country (Athens and Thessaloniki) and the crossing point is approximately 60km from the capital Athens. As a result in the 1960s, it was considered an ideal location for the establishment of new industries, adequately far from the already highly congested and polluted capital but also at a commutable distance. An increasing number of enterprises were gradually established, especially in the 1980s and 1990s including those considered as high polluters. However, due to the lack of enforcement of environmental regulations on waste disposal in the past decades, untreated industrial waste was dumped in the river causing significant environmental degradation to the water table (Botsou et al., 2011). As a result, considerable conflict emerged between the local community and the firms. Due to the concerns about water contamination, several studies have been published regarding the levels of environmental quality in the Asopos river area (Botsou et al., 2011; Lili et al., 2015). A recent interesting study also estimated the willingness to pay of local households in order to recover levels of environmental quality in the river (Tentes and Damigos, 2016). However, no study has explored, to our knowledge, community perceptions for local industries in the area and the factors explaining these perceptions. This is an important issue that needs to be explored in order to provide evidence for the wider discussion on how development in the area can be achieved based on the principles of sustainable development.

3.2 Research questionnaire and sampling

In order to explore perceptions a semi-structured questionnaire was distributed to a sample of the population in 21 local communities located near the river or affected by environmental degradation due to the contaminated water table in the wider area of the Asopos river. The questionnaire was distributed during the summer of 2014 as part of a larger research project (INSPIRED) by experienced researchers. The total sampling frame for the distribution of the structured questionnaires in the area was estimated to be 30,000 individuals based on data available from the 2011 census by the

Hellenic Statistical Authority. A sample of 1,000 households was approached in order to secure an adequate amount of data for the statistical analysis, which is also representative of the actual population. The number of participants from each community was determined based on the population of the communities in the sampling frame. A simple random sampling technique was applied that allows the drawing of valid conclusions about the entire population of the region based on the selected sample. Specifically, for selecting the sample size of the finite population (n_{finite}) of a total size of N≈30.000 population, the following formula was utilized:

$$n_{finite} = \frac{N \cdot n}{N + n - 1} \qquad (1)$$

.

$$\text{where } n = \frac{t^2 \hat{p}(1 - \hat{p})}{e^2} \qquad (2)$$

and

$$\hat{p} = \frac{\sum_{i=1}^{n}(p_i)}{n} \qquad (3)$$

The latter formula (3) denotes the estimation of population proportion sharing a certain characteristic on one of the dichotomous variables in the survey. (e) denotes the acceptable proportion of error between the sampling proportion and the unknown proportion of the population (e=3 % was chosen). (For a confidence level of 95%, t=1.96). In addition, according to the pilot survey conducted prior to the final distribution, the higher proportion value was $\hat{p}$ =0.50, and the required total sample size n is thus determined to be approximately n_{finite}=1000.

The questionnaire consisted of several parts. Demographic data were collected regarding gender, income, age, years of residency in the area, education and employment in local enterprises. Another set of questions explored perceptions regarding the level of environmental quality in the area

referring to biodiversity, water and air but also encompassing perceptions on the severity of the problem. A different set of questions explored awareness of CSR activities by local enterprises, whether individuals have communicated with local enterprises and finally the impact of local enterprises on the sustainable development of the local community. The majority of the questionnaires were distributed through face-to-face interviews while 500 postal questionnaires were also sent in order to increase the response rate. Approximately 80% of participants agreed to participate in the face-to-face interviews, and 10% of the postal questionnaires were returned. In total, 858 questionnaires were collected. The demographics of the participants (Table A.1) were cross-checked in relation to the demographics of the actual population confirming that the sample characteristics were close to the real population with a higher frequency observed for male respondents. This was because the survey was conducted at a household level and on certain occasions, male respondents were more willing to reply to the survey compared to women in the same household.

Analysis of data was conducted using the SPSS 21.0 software (IBM Corp. Released, 2012). The majority of questions were of a 5-point Likert scale with a few dichotomous type questions (YES/NO). Appropriate statistical techniques were used in order to explore links between variables (t-tests, Chi-square, ANOVA, Pearson's correlation coefficient r, Spearman's Rho correlation coefficient rs).

4. Results

4.1. Perceptions regarding environmental quality in the area

A first issue that was explored concerned perceptions of the level of local environmental quality. 74.45% of the participants considered that there is an environmental problem in the Asopos River and the severity of the water and soil contamination was considered very high with an average score of 4.57 out of 5 (std. deviation: 0.84, 5 representing the most severe). Lowest scores were observed regarding drinking water, with 38% of participants rating quality of drinking water as 'low' and 'very low'. Similarly 31.2% of the respondents evaluated as 'low' or 'very low' the quality of local biodiversity. Equally, the lowest scores of quality evaluation were concentrated in air quality, with a 20.9% evaluation as 'low' and 'very low' and the soil quality (very low level: 15.5%). The general environmental quality is also negatively rated by a high proportion of respondents (27.7%) as low and very low quality (Table 1).

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216

217   **[Insert Table 1 about here]**

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219   **4.1.1 Factors explaining perceptions of local environmental quality**

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221   Data analysis revealed that individuals who considered that there is an environmental problem in the area also perceived a lower level of

222   environmental quality in all aspects explored, compared to individuals who considered that there is no environmental degradation in the Asopos river

223   (Table 2). According to the results, individuals who tend to consider the problem of pollution as important also evaluate environmental quality (r_s= -

224   0.16, *p<0.01*), biodiversity (r_s=-0.18, *p<0.01*), air quality (r_s=-0.18, *p<0.01*) and soil quality (r_s=-0.17, *p<0.01*) as low in the area.

225

226   **[Insert Table 2 about here]**

227

228   Differences between gender were observed regarding the perceived level of environmental quality in the area, with men considering that

229   environmental quality is better (mean 3.35 out of 5 where 5 is the highest environmental quality) compared to women (mean: 3.19 out of 5) (t= 10.028,

230   *p<0.01*). Furthermore, female participants were more concerned about the level of degradation in the area, with 81.3% of women stating that there is a

231   problem compared to 71.3% of male participants (Chi-square: 9.752, *p<0.01*). Similarly, women in the sample were more concerned about the severity

232   of the problem, with a mean score of 4.62 (out of 5 where 5 is the highest importance for the local pollution problem) compared to male respondents

233   (4.55) (t=4.78, *p<0.05*).

234   The average age of respondents who declared there to be an environmental problem was 39 compared to individuals who considered there was no

235   environmental degradation in the area whose average age was 47 (t=14.5, *p<0.01).* The severity of the problem had a negative connection, with

236   younger individuals perceiving a lower level of severity regarding environmental pollution (r= -0.86, *p<0.05*). A similar tendency is observed for the

237   level of environmental quality in the area. Higher educational levels were linked with perceptions that the environmental quality in the area is low

(Table 3). Similarly, individuals with a higher educational level also considered that a problem exists in the area. Only 50% of participants with the lowest level of education considered there to be a problem of environmental degradation (less than 6 years in education). This percentage increases to over 80% for other educational categories beyond secondary level (+12 years) (Chi-square: 54.50, *p<0.01*). Income level is linked with perceptions of the severity of the problem with higher earning individuals perceiving a greater severity (r_s=0.12, *p<0.01*). However, income does not influence other perceptions of individuals regarding environmental quality.

[Insert Table 3 about here]

Finally, individuals who have been living in the area for a longer period consider that there is better environmental quality (r_s=0.11, *p<0.01*) compared to individuals who have moved to the area more recently. Those individuals considering there to be a problem in the area have lived there on average for 29 years compared to those who considered that there was no problem where the average years of residency was 40 (t= 6.95, *p<0.01*). However, individuals who have lived longer in the area tend to believe that the pollution in the river is of high severity (r_s=0.11, *p<0.01*).

4.2. Awareness regarding activities of local enterprises beneficial for the local community

According to the results of the study, 43.8% of respondents were aware of socio-cultural activities initiated by local enterprises: 26.8% were aware of financial contributions from local enterprises, 26.9% were aware of charity events, 23.8% were aware of environmental activities, 13% mentioned support of touristic infrastructure and 21% educational activities. Finally, only 31.8% of the sample had communicated with a local enterprise regarding matters of the local community.

4.2.1. Factors explaining citizens' knowledge and perceptions regarding the role of local enterprises

When exploring the impact of demographics on citizens' awareness regarding local companies' activities benefiting the local community, a trend is observed where individuals of a younger age tend to be less aware of such activities (Table 4). Also, women are significantly more aware of such initiatives (Table 4). Statistically significant differences are presented between educational and income categories and the level of awareness of such activities. A tendency is presented where individuals with over 12 years of education and higher incomes are more aware of such initiatives (Table 5). Finally, individuals employed in local enterprises are more aware of such activities compared to individuals not working in local businesses (Table 5).

[Insert Tables 4 & 5 about here]

4.3. Perceptions of the impacts of local enterprise activities

Another set of questions explored opinions about the impact of local enterprises on the local community in relation to a variety of issues. According to respondents, the most positive impact was contribution to employment levels and the highest negative impact was on environmental quality in the area (Table 7). The influence of certain demographic characteristics on these perceptions was also explored. According to the analysis (A.2), individuals with a higher educational level, higher income and those employed in local enterprises tend to perceive local businesses as having a positive impact. Conversely, individuals who have lived longer in the area and are older tend to perceive more negative impacts from local enterprises (Table 7).

[Insert Table 6 about here]

[Insert Tables 7 about here]

4.4. Co-existence of local enterprises with the local community

31.8% of participants mentioned that they have been in touch with local enterprises for issues relevant to their local area. When exploring the impact from other demographic variables, it is clear that individuals who tend to communicate with local enterprises are male with over 12 years of

282 education and with an income of between €30,001 and €60,000. The rest of the demographic variables have a non-significant influence. Finally, higher

283 levels of awareness regarding the actions of enterprises are also linked to more positive perceptions regarding their impacts in all issues explored (A.3).

284

285 **5. Discussion and conclusion**

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287 The results of this study are useful in helping researchers and policy makers to understand local community perceptions of local enterprises

288 especially in the context of communities facing low environmental quality due to industrial activity. The Asopos river area is an interesting case study

289 as through the years the area has faced significant problems of environmental degradation due to the establishment of high polluting industries (Davila

290 et al., 2017; Panagopoulos et al., 2016). This paper also contributes to the discussion, currently taking place in Greece, regarding the role of local

291 industries in the context of the current economic recession (Hyz and Karamanis, 2017). As the Greek government is seeking to find new policy

292 initiatives and ways to move out of the recession (Papatheodorou and Pappas, 2017), it is important to provide evidence which will allow the inclusion

293 of citizens' perceptions for the environmental and social responsibility of local enterprises in areas that face environmental degradation, thus leading to

294 policies focusing on the social aspects of sustainable development and not just economic development.

295 Overall, the level of awareness regarding the environmental quality in the area was significantly high, with the majority of participants declaring

296 themselves to be aware of and concerned about the low environmental quality. These perceptions are relevant to other studies that reveal the concern

297 of citizens for local environmental hazards (Hernandez, Collins and Grineski, 2015; Schafft, Borlu and Glenna, 2013). Regarding factors explaining

298 these perceptions, female respondents were more concerned about the level of environmental quality confirming previous studies about gender

299 differences where often women have a lower level of environmental knowledge compared to men but at the same time are more concerned about

300 environmental issues (Glass, Cook and Ingersoll, 2016;Kollmuss and Agyeman, 2002). In this context, previous studies have confirmed the importance

301 of environmental behavior and involvement of women in local environmental management and conservation practices (Katz et al., 2015).

302 Furthermore, younger participants were more concerned about the level of environmental quality, a fact often observed in similar studies where

303 individuals tend to get less concerned about environmental issues as they get older (Szagun and Pavlov, 1995; Wiernik et al., 2013). This is a long

304 established link in the literature (Dillman and Christensen, 1972) but there is evidence that there might be a gradual shift as younger individuals who

305 tend to be more environmentally educated are expected to maintain positive environmental principles in the long term (Aminrad, Zakaria and Hadi,

306 2011; Van Liere and Dunlap, 1980). Regarding the impact of education and income level, our results confirm previous studies regarding the role of

307 these factors on environmental perceptions. In particular, participants who had completed over 12 years of education were significantly more

308 concerned regarding the level of environmental quality. This is in line with previous findings where educated individuals are more concerned about

309 environmental issues and more engaged in actions that support the protection of the natural environment (Zsoka et al., 2013).

310 Moreover, individuals with higher income considered that the environmental problems are more severe, confirming the link between environmental

311 awareness and income (Franzen and Meyer, 2010). Low income level is often observed in environmentally degraded areas with residents wishing to

312 move away, fuelling issues of social, environmental and economic decline. Furthermore, a recent study has shown that individuals from areas with low

313 quality of life are less likely to be environmentally active (Zhao et al., 2014). Another interesting finding explaining perceptions for environmental

314 quality is how long an individual has been a resident in a specific area. It should be noted that in Greece, the rate of geographical mobility is quite low

315 with individuals often staying in the same area for decades (Pratsinakis, Hatziprokopiou and King, 2017). According to our study, individuals who

316 have lived in the area longer tend to have a more positive perception of environmental quality levels. A potential interpretation is that individuals who

317 have moved more recently to the area are probably not used to the situation and thus express a higher concern about local environmental depletion

318 while individuals who have lived longer in the Asopos area are older and thus have a lower perception of and concern about the risks regarding the

319 level of environmental quality (impact of age). However, it is interesting that those who have lived in the area for a longer period consider the problem

320 of environmental degradation as more severe. This can be explained taking into consideration the history of the problem in the Asopos river where a

321 decade ago the issue was much more severe as there were very limited initiatives by the government to tackle it. At the moment some industries have

322 been fined and environmental regulations have been strengthened in Greece (Filentas and Paralikas, 2014). Moreover, individuals who have lived

323 longer in the area will have experienced the severe clashes that emerged in the area between the local community and the industries which included

324 conflicts with central government due to their lack of action.

325 A second important topic that was explored in the study concerned perceptions of local enterprises. This was a very important issue to examine,

326 both because it fills a gap in the international literature but also because of the current economic recession in Greece and the need to build new bridges

327 between the corporate sector and local communities. It is interesting to note that less than half of the participants were aware of CSR activities from

local enterprises benefitting the local community, confirming a growing body of literature demonstrating that knowledge of CSR has a positive influence on citizens' responses, attitudes and general behavior towards local enterprises (Pathak, Tudu and Pathak, 2014). However, only a third of the sample had communicated with local enterprises about community matters. This is a disappointing finding considering the important role that local enterprises can have in creating strong ties with local communities especially during challenging financial times (Ameer et al., 2017; Greiling and Grub, 2014; Kavoura and Sahinidis, 2015; Health and Lee, 2016). Regarding the impact of demographics, male respondents, younger individuals and participants with lower income and educational levels had a lower level of awareness of the activities of local businesses. This is in accordance with previous studies revealing that more educated communities with higher income levels tend to be more engaged with local firms (Kim and Ferguson, 2014).

Concerning the impact of existing activities, a variety of issues were explored in the study. Employment was the most important positive impact from local enterprises. However, the valuation for the importance of this impact was surprising low, with only 50% of the sample considering this as a positive impact and 28.9% considering it as having no impact at all. Taking into consideration the large number of enterprises in the area (estimated to be 700), this was a very interesting and unexpected finding as the level of employment of the local population in these organisations is low. Several researchers underline the importance of entrepreneurial strategies focusing on the establishment of infrastructure supporting the local workforce where the main industrial activities take place (Fleming and Measham, 2014). In our study, a positive impact on local agricultural products was also evident highlighting the important role of local enterprises in improving market access for such products by reducing transaction costs (Weng et al., 2013). The most negative impact was observed on the natural environment. This is possibly linked with the perception of local communities regarding the immediate risks associated with industrial activities in the area (De Castro et al., 2017). However, it should be noted that almost a third of the sample considered that there was no impact from the existence of enterprises.

Demographic factors explaining these perceptions include the fact that individuals with a higher educational level, higher income and those employed in local enterprises tend to perceive those businesses as having a positive impact in general. On the other hand, those who have lived longer in the area and are older tend to perceive more negative impacts from local enterprises. This finding is not surprising considering that older people and those who have lived longer in the area have been significantly influenced by the long-term existence of the problem; this is in accordance with previous findings in the relevant literature (Kim and Ferguson, 2014).

A final interesting issue explored in the study concerned the existing links between local enterprises and the local community, a relationship which can be considered a core element in building communities based on the principles of sustainable development. Only a third of the sample have communicated with local enterprises, a very low percentage considering the size of these communities where the majority are of less than 10,000 inhabitants and dense local networks are to be expected (Putnam, 2000). According to the statistical analysis, men tend to communicate more with local enterprises, a fact which is possibly linked to the existence of more traditional family structures in the area and the role of women in the household. Also, higher income and educational levels are associated with better links with local businesses; this finding is possibly linked with the networks that individuals with such demographic characteristics can access (Coleman, 1990).

Despite the importance of these findings, it is useful to mention certain limitations of the current study. Firstly, a quantitative social research technique was used that captured perceptions during a specific time frame. However, as the impact of the economic recession has changed in the past years, it would be interesting to initiate a study aiming to collect longitudinal data allowing us to observe the change in perceptions towards local enterprises in the area. Secondly, the study focused on specific factors expected to influence individual perceptions of CSR activities. Additional factors need to be taken into consideration in order to further understand citizens' perceptions, including both individual parameters and indicators focusing on community (macro) level.

In conclusion, the aim of the paper was to highlight the importance of local community perceptions of local enterprises and to explore this issue in the area of the Asopos river in Greece. Thus, the importance of the study is built on two main issues. Firstly, the study highlights the need to research local community perceptions of local industries and their CSR activities, a focus which is often neglected in the literature. Secondly, the study is of a significant local and national interest as it explores CSR activities in an area which urgently needs governmental action in order to recover from environmental degradation also taking into consideration the socio-economic impacts of the current recession in Greece. The main findings of the study reveal that there are several factors to be taken into consideration when exploring perceptions of CSR activities such as education, gender and age. This is an important conclusion which has not been adequately explored in the literature. Regarding findings for the specific case study, our results reveal that there are high levels of concern about the worsening level of environmental quality in the Asopos area and it was disappointing to observe a low level of awareness regarding CSR activities from local enterprises. Common predictors such as gender, income and age were found to be

important factors in explaining local community perceptions. Future research needs to focus on additional factors and the development of a framework that can be applied in different geographical and socio-economic contexts.

Acknowledgments

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Table 1. Perceptions for environmental quality in the area (scale 1-5, 5 representing highest environmental quality)

Quality	Very poor % (1)	Poor % (2)	Acceptable % (3)	Good % (4)	Very good % (5)
Environmental quality (general)	11.6	16.1	25.7	24.4	22.2
Drinking water quality	20.7	17.3	19.6	20.5	21.9
Biodiversity	11.6	19.6	26.1	22.9	19.8
Air quality	10.8	10.1	17.1	29.2	32.9
Soil quality	10.0	15.5	24.2	25.0	25.4

Table 2. Comparison of means regarding perceptions of environmental quality between individuals who consider that the area faces environmental problems and those that do not

	Is there an environmental problem in the area?	Mean	Std. Deviation	T-test (Independent)
Environmental quality (general)	No	4.05	1.128	
	Yes	3.03	1.242	t=10.73***
Biodiversity	No	3.91	1.292	
	Yes	2.76	1.374	t=10.85***
Soil quality	No	3.77	1.190	
	Yes	3.01	1.256	t=7.8***
Drinking water quality	No	4.28	1.080	
	Yes	3.41	1.322	t=8.85***
Air quality	No	4.14	1.056	
	Yes	3.15	1.266	t=10.39***

***p<0.01

Table 3. Spearman Rho (r_s) correlations linking perceptions of environmental quality with educational and income level

	Correlation with educational level (Spearman Rho)	Correlation with income level (Spearman Rho)
Environmental quality (general)	-0.22*	-0.08 n.s.
Drinking water quality	-0.21*	0.027 n.s
Biodiversity	-0.21*	0.020 n.s
Air quality	-0.26*	-0.071 n.s
Soil quality	-0.27*	-0.015 n.s

* *p<0.01*, n.s.=non significant

Table 4. Chi-square test and t-test exploring connections between gender, age and years living in the area with awareness of activities and communicating with local enterprises.

		Years in the area			Age			Employed in local enterprise			Gender		
		YES (mean)	NO (mean)	t-test	YES (mean)	NO (mean)	t-test	Employed and Aware of activities (%)	Not employed and aware (%)	X^2	Women (Yes, %)	Men (Yes, %)	X^2
	Socio-cultural activities	25.98	36.97	-7.98 **	34.38	46	8.68 **	58.1	38.5	28.8**	57.8	38.4	27.84 **
Awareness of:	Financial contributions	28.68	33.34	-2.94 **	36.22	42.11	3.99**	34	24.1	9.2**	34.1	24.2	9.01 **
	Charity events	27.31	33.85	-4.15 **	34.88	42.6	5.27 **	36.5	23.2	16.57**	34.1	24.3	8.76 **
	Environmental activities	26.41	33.91	-4.60 **	33.52	42.72	6.04 **	31.3	21.1	10.45**	27.3	23.0	1.90 n.s
	Tourist infrastructure	25.51	33.05	-3.61 **	31.63	41.79	5.2 n.s	18.2	10.9	8.80*	12.7	13.6	0.10 n.s
	Educational activities	26.07	33.74	-4.48 **	33.69	42.33	5.38 **	25.8	19.6	4.2**	30.3	17.4	17.79 **
	Communicating with local enterprises	32.74	32.22	0.34**	40.64	40.96	0.22 **	48.1	23.9	50.42**	31.8	32.4	0.489 n.s.

**p<0.01, *p<0.1, n.s.= non significant

Table 5. Chi-square tests linking income and education with awareness of activities and also communicating with local enterprises

		Years of education							Income level					
		0-6	7-9	10-12	12-14	14-16	16+	X^2	No income	1-12,000	12,000-30,000	30,001-60,000	Over 60,000	X^2
Awareness of:	Socio-cultural activities	23.1	28.6	45	50.4	62.7	38.5	61.39**	61.8	37	40.5	45.8	64.3	37.6**
	financial contributions	13.2	21.6	26.3	31.5	37.8	26.9	25.97**	28.8	25.9	27.2	33.3	50	4.59*
	charity events	14	22.7	28	33.9	32.3	34.6	17.69**	31.6	24.3	26.2	50	42.9	11.60*
	environmental activities	13.2	17.5	25.5	33.9	27.5	23.1	17.92**	37.3	17.6	19.9	45.8	50	40.99**
	touristic infrastructure	5	15.5	15.2	14.5	14.9	7.7	9.82*	21.7	10.4	9.9	12.5	28.6	19.87**
	educational activities	13.2	13.4	16.4	25	34.3	30.8	34.40**	29.7	16.8	18.8	25	35.7	16.18**
	Commuication with local enterprises	26	30.2	26.1	44.4	38.5	26.9	19.55**	30.5	29.7	36.3	54.2	28.6	8.2*

**p<0.01, *p<0.1

Table 6. Perceptions of the impact of local enterprises on local communities

Impact category	Positive (%)	Negative (%)	No impact (%)
Employment	50	21.1	28.9
Living standard	42.7	23.6	33.6
Local economy	45.9	24.3	29.8
Research & Development	29	22.4	48.6
Support of social and cultural activities	42.1	21.4	36.4
Health	26.1	31	42.9
Environment	28.5	34.3	37.2
Merchandise of local product	46.9	18.9	34.2
Agricultural production	49.4	19.3	31.3
Quality of life	45.3	21.2	33.5

Table 7. ANOVA comparison of means exploring the influence of 'years living in the area' and 'age' on perceptions regarding the impact of local enterprise initiatives.

Impact category (positive)	Impact	Years living in the area		Mean Age	
	Positive	27.37	$F=26.6^{***}$	36.52	$F=26.24^{***}$
	Negative	39.09		48.35	
Employment	No impact	35.84		42.67	
	Positive	29.36	$F=6.38^{***}$	39.22	$F=2.99^{*}$
	Negative	34.9		43.48	
Living standards	No impact	34.15		41.03	
	Positive	28.85	$F=10^{***}$	38.43	$F=5.40^{***}$
	Negative	34.64		43.12	
Local economy	No impact	35.54		42.55	
	Positive	27.63	$F=9.34^{***}$	36.26	$F=9.60^{***}$
	Negative	34.55		42.56	
R&D supply	No impact	34.34		42.83	
	Positive	=28.59	$F=10.35^{***}$	36.05	$F=19.57^{***}$
Support for social and cultural	Negative	34.8		43.57	
activities	No impact	35.3		44.74	
	Positive	27.13	$F= 10.20^{***}$	34.88	$F= 15.84^{***}$
	Negative	35.29		44.49	
Health	No impact	33.29		41.76	
	Positive	28.05	$F= 8.13^{***}$	36.17	$F= 9.65^{***}$
	Negative	32.58		42.45	
Environment	No impact	35.18		43.00	
	Positive	30.02	$F= 5.29^{***}$	39.27	$F=2.61^{*}$
	Negative	32.95		42.92	
Support for local products	No impact	35.19		41.89	
	Positive	29.58	$F=8.32^{***}$	38.49	$F=6.40^{***}$
	Negative	33.36		43.85	
Agricultural production	No impact	36.11		42.75	
	Positive	29.68	$F=6.19^{***}$	39.14	$F= 3.51^{**}$
	Negative	33.47		43.63	
Quality of life	No impact	35.24		41.56	

$^{***}p<0.01$, $^{**}p<0.05$, $^{*}p<0.1$

APPENDIX

A.1. Demographic of the Sample

Sample Characteristics	Category	%
Gender	Male	68.6
	Female	31.4
	Up to 6 years	14.8
	9 years	11.6
	12 years (Secondary education)	32.0
Educational Level		
	15 years (post-secondary)	14.8
	Higher Education	23.5
	Post-Graduate Studies	3.1
	No income	25.6
	Up to 12.000	46.3
Income level	12.001-30.000	23.5
	30.001-60.000	2.9
	Over 60.000	1.7
Age (Mean)	Mean	46.67
Years Living in the Area	Mean	32.4

A.2. Chi-square tests exploring links between demographics and perceptions regarding the impact of local enterprises

Impact category	Impact	Income						Education (years)							Gender			Employment in local enterprises		
		No income	1-12K	12K- 30K	30K- 60K	> 60K	X^2	0-6	7-9	10-12	12-14	14-16	16+	X^2	Female	Male	X^2	YES	NO	X^2
	Pos	54	44.9	55.2	58.3	58.3	9.64*	22.6	41.4	53.9	52.8	63.7	53.8	59.88***	57.4	46.6	10.43*	56.8	47.1	7.3*
	Neg	17.1	23.6	19.8	16.7	16.7		32.3	26.3	21.4	17.6	13.4	23.1		15.5	23.6		18.5	21.4	
Employment	N.I.	28.9	31.5	25	25	25		45.2	32.3	24.7	29.6	22.9	23.1		27.2	29.8		24.7	31.6	
	Pos	38.1	40.4	50	62.5	50	13.27**	25.8	42.3	44.4	46.8	49	46.2	28.56**	40.3	48.3	4.81*	48.1	40	5.10*
	Neg	24.3	23	22.9	12.5	28.6		25	24.7	26.7	15.9	23	23.1		24.2	21.5		20.4	24.7	
Living standards	N.I.	37.6	36.7	27.1	25	21.4		49.2	33	28.9	37.3	28	30.8		35.3	30.2		31.6	35.3	
	Pos	44.8	41.5	54.7	58.3	57.1	12.18**	20.2	42.3	48.1	50	56.8	57.7	49.23***	44	49.8	3.26*	53.9	48.2	10.55*
	Neg	26.7	25.1	20.3	20.8	21.4		33.1	23.7	25.9	24.6	18.6	15.4		20.9	20.9		21.5	25	
Local Economy	N.I.	28.6	33.3	25	20.8	21.4		46.8	34	25.9	25.4	24.6	26.9		29.3	29.3		24.6	32.7	
	Pos	32.7	25.7	30.9	37.5	42.9	7.39*	12.9	26.3	34.3	32.3	32.1	26.9	27.46**	27.6	32.3	2.01*	33.6	26.5	6.7*
	Neg	44.2	22.2	19.4	16.7	35.7		30.6	19.2	24.3	18.5	19.4	15.4		22.9	20.9		17.3	23.9	
Research & Development	N.I.	23.1	52.1	49.7	45.8	21.4		56.5	54.5	41.4	49.2	48.5	57.5		49.6	46.8		49.1	49.5	
	Pos	49.8	34.7	45	45.8	64.3	20.61**	22.6	31.3	44.2	47.2	54.5	42.3	46.20***	37.1	53.2	19.2*	51.8	37.2	17.69**
	Neg	20.6	21.8	20.4	29.2	14.3		26.6	26.3	24.2	22.4	11.6	19.2		23.3	17		19.4	21.4	
Support of social and cultural activities	N.I.	29.7	43.4	34.6	25	21.4		50.8	42.4	31.6	30.4	33.8	38.5		39.6	29.8		28.9	41.4	

Category	Impact																		
	Pos	33.3	22.8	24.6	16.7	42.9	20.37**	17.9	18.2	31	23.8	30.5	26.9	15.50**	21.8	35.8	18.95*	30	24.1 3.55*
	Neg	23.3	30.4	38.2	33.3	35.7		30.9	34.3	31.7	31	29	26.9		33.3	25.7		27.9	31.6
Health	N.I.	43.3	46.9	37.2	50	21.4		51.2	47.5	37.3	45.2	40.5	46.2		44.9	38.5		42.2	44.3
	Pos	33.2	24.9	28.3	25	42.9	14.54**	17.2	30.3	31.5	29.6	29.4	30.8	20.82**	23.7	39	21.54*	30.7	27.3 1.16*
	Neg	33.2	31.7	40.3	33.3	35.7		30.3	30.3	35.6	32	39.6	30.8		35.8	31.1		32.2	34.6
Environment	N.I.	33.7	43.4	31.4	41.7	21.4		52.5	39.4	33	38.4	31	38.5		40.5	29.9		37.1	38.1
	Pos	47.9	43.7	55	50	57.1	12.17**	29.6	56.6	48.3	43.5	53.8	50	28.74**	44.7	52.1	4.03*	52.6	44.7 4.92*
	Neg	20.9	18.7	14.3	25	28.6		23.2	13.1	18.2	26.6	15.6	15.4		19.8	17		17.2	18.9
Merchandise of local product	N.I.	31.3	37.6	30.7	25	14.3		47.2	30.3	33.5	29.8	30.7	34.6		35.5	30.9		30.2	36.4
	Pos	53.6	44.9	57.3	50	42.9	12.40**	30.1	57.6	47.8	45.2	63.5	46.2	48.13***	45.8	57.6	10.12*	57.7	45.8 15.96**
	Neg	18	20.1	16.1	29.2	28.6		23.6	12.1	20	29.4	13.5	19.2		20.9	26.5		19.6	18.2
Agricultural production	N.I.	28.4	35.1	26.6	20.8	28.6		46.3	30.3	32.2	25.4	23	34.6		33.3	15.9		22.7	35.9
	Pos	46.2	39.6	54.7	54.2	42.9	13.52**	29.8	50	45	46	52.5	50	20.27**	42.2	52.5	7.91*	50.9	42.8 7.67*
	Neg	18.6	23.1	18.2	20.8	21.4		26.6	15.6	20.8	24.6	19.7	15.4		22.7	17.6		21.4	20.2
Quality of life	N.I.	35.2	37.2	27.1	25	35.7		43.5	34.4	34.2	29.4	27.8	34.6		35.1	29.9		27.7	37.1

***p<0.01, **p<0.05, *p<0.1; Pos=positive impact, Neg=Negative impact, N.I.=No Impact

A.3. Crosstabulations linking awareness of initiatives by local enterprises with perceptions on their impact for the local community

Impact category (positive)	Impact	Socio-cultural activities (YES)		Financial Contribution		Charities		Environmental protection		Tourist infrastructure		Educational activities	
	Positive	59.5	$X^2=24.39$*	66.5	$X^2=40.89$ ***	62.8	$X^2=21.51$ ***	60.8	$X^2=12.83$ ***	66.1	$X^2=13.74$ ***	66.7	$X^2=25.54$ ***
	Negative	17.3		9.1		13.9		17.2		12.5		15	
Employment	No impact	23.2		24.3		23.4		22.1		21.4		18.3	
	Positive	50.3	$X^2=15.60,$	60	$X^2=37.76$*	54.1	$X^2=16.73$*	55	$X^2=18.93$*	58.9	$X^2=13.49$ ***	58.7	$X^2=24.71$ ***
	Negative	21.5		15.7		19.9		22.3		17		20.1	
Living standards	No impact	28.2		24.3		26		16.3		24.1		21.2	
	Positive	56.6	$X^2=32.93$ ***	67	$X^2=56.90$ ***	58	$X^2=19.34$ ***	56.2	$X^2=13.98$ ***	60.7	$X^2=12.93$ ***	58.1	$X^2=14.20$ ***
	Negative	21.6		14.3		20.3		23.2		21.4		20.7	
	No impact	21.8		18.7		21.6		20.7		17.9		21.2	
Local Economy	Positive	39.8	$X^2=36.50,$ ***	47.4	$X^2=53.95$ ***	45.7	$X^2=41.56$ ***	45.3	$X^2=32.96$ ***	53.2	$X^2=36.72$ ***	43.4	$X^2=22.53$ ***
	Negative	19.8		12.3		17.8		17.4		18		20.2	
	No impact	40.4		40.4		36.5		37.3		28.8		36.5	
R&D Supply	Positive	66.3	$X^2=163.4$ ***	67.7	$X^2=87.54$ ***	67.4	$X^2=83.89$ ***	67.6	$X^2=73.68$ ***	72.1	$X^2=49.23$ ***	71.2	$X^2=79.54$ ***
	Negative	13.2		9.2		11.3		14.2		14.4		9.6	
Support of social and cultural activities	No impact	20.5		23.1		21.3		18.1		13.5		19.2	
	Positive	43.3	$X^2=99.21$**	48.7	$X^2=80.39$ ***	51.1	$X^2=99.35$ ***	52.9	$X^2=98.61$ ***	60.7	$X^2=77.85$ ***	51.4	$X^2=74.05$ ***
	Negative	24.9		20.4		19.9		21.6		15.2		22.3	
Health													

Category	Impact	Value	X²	Value	X²	Value	X²	Value	X²	Value	X²	Value	X²
	No impact	31.8		30.9		29		25.5		24.1		26.3	
	Positive	44.9	X^2=87.80 ***	47.6	X^2=57.87 ***	51.7	X^2=81.82 ***	57.1	X2=105.34 ***	65.6	X^2=83.92 ***	54.8	X^2=76.43 ***
	Negative	29.5		29.5		23.9		20.2		18.2		24.9	
Environment	No impact	25.7		22.9		24.3		22.7		16.4		20.3	
	Positive	63.3	X^2=71.52 ***	68.0	X^2=57.77 ***	66.1	X^2=46.62 ***	64	X2=31.21 ***	72.1	X^2=32.94 ***	68.3	X^2=42.01 ***
	Negative	14.2		8.8		12.2		12.8		8.1		11.7	
Merchandise of local product	No impact	22.5		23.2		21.7		23.2		19.8		20.0	
	Positive	67.7	X^2=90.07 ***	70.4	X^2=56.22 ***	71.9	X^2=63.67 ***	72.9	X2=58.99 ***	73.9	X^2=31.93 ***	75	X^2=59.41 ***
	Negative	12.5		10		10.8		10.8		6.3		10	
	No impact	19.7		19.6		17.3		16.3		19.8		15	
Agricultural production	Positive	60.5	X^2=62.19 ***	67.2	X^2=60.25 ***	64.3	X^2=45.18 ***	63.5	X2=35.95 ***	71.2	X^2=39.71 ***	68.9	X^2=51.89 ***
	Negative	15.5		12.7		13.9		12.3		3.6		15	
	No impact	24		20.1		21.7		24.1		25.2		16.1	
Quality of life													

***p<0.01, **p<0.05, *p<0