

**ENERGY JUSTICE, SOCIAL RESPONSIBILITY AND SUSTAINABLE DEVELOPMENT: CASE OF A POWER GENERATION COMPANY**

**Issa Ibrahim Berchin<sup>1</sup>, Ícaro Roberto Azevedo Picolli<sup>2</sup>, Gabriela Almeida Marcon<sup>3</sup>, Jacir Leonir Casagrande<sup>4</sup>, José Baltazar Salgueirinho Osório de Andrade Guerra<sup>5</sup>**

***Abstract.** There is an increasing demand from society for more responsibility, transparency, accountability, and social and environmental sustainability from organizations. Organizations are responding to this demands by providing social services and empowering communities. Accordingly, some organizations engaged in energy projects, especially in renewable energies, are addressing social justice while planning, developing and implementing their projects, engaging the communities in promoting awareness to them. Therefore, this paper aims to explore how energy justice, as a source of social responsibility, is approached in practice. In order to do so, a literature review on energy justice and social responsibility was developed, followed by a review of the case of a community park developed and maintained by a power generation company. According to the literature, studies on energy justice is increasing in quantity and relevance, showing the increasing importance of this subject. Thus, the case study approach may be an interesting way of understanding its application in organizations' activities and projects.*

***Keywords:** Energy Justice; Social justice; Renewable Energies; Social Responsibility; Sustainable Development; Innovation*

---

<sup>1</sup> Mestrando. Discente do Programa de Pós-Graduação stricto sensu em Administração da Universidade do Sul de Santa Catarina – PPGA-UNISUL/ issaberchim@gmail.com

<sup>2</sup> Mestrando. Discente do Programa de Pós-Graduação stricto sensu em Administração da Universidade do Sul de Santa Catarina – PPGA-UNISUL/ icaropicolli@gmail.com

<sup>3</sup> Mestranda. Discente do Programa de Pós-Graduação stricto sensu em Administração da Universidade do Sul de Santa Catarina – PPGA-UNISUL/ gabriela@almeidamarcon.com

<sup>4</sup> Docente do Programa de Pós-Graduação stricto sensu em Administração da Universidade do Sul de Santa Catarina – PPGA-UNISUL/ jacir.unisul@gmail.com

<sup>5</sup> Docente do Programa de Pós-Graduação stricto sensu em Administração da Universidade do Sul de Santa Catarina – UNISUL/ Baltazar.Guerra@unisul.br

## **1. INTRODUCTION**

The increasing global challenges require innovative thinking and behavior to support sustainable development paths and quality life to all. Social responsibilities of companies as a tool to promote justice and sustainability transformations of the society, helps to improve social wellbeing, environmental preservation and economic development, avoiding injustices – such as those related to energy and the environment (Sovacool & Dworkin, 2015).

Energy justice is key to societal wellbeing, seeking to emphasize the social dimension of energy, going beyond technologies to improve energy efficiency and efficiency in production, storage and transmission. Energy justice embrace the ways which energy is produced, their external costs and who have access to it, it also integrates ethical, social and environmental concerns (Yenneti & Day, 2016). Therefore, acknowledging that social and environmental attitudes, especially in companies, permeate sustainability and ethical behaviors, a link between energy justice, social responsibility and sustainability is noticeable (Lindgreen & Swaen, 2010; Sovacool & Dworkin, 2015).

Within these and regarding the emerging field of energy justice, further studies are required to understand the relations between social corporate social responsibility, sustainability and energy justice. Therefore, the following question requires some attention: How energy justice linked to social responsibility can promote major benefits to the society? This study aims to explore how energy justice, as a source of social responsibility, is approached in practice. In order to do so, a literature review on energy justice and social responsibility was performed, followed by a review of the case of a community park developed and maintained by a power generation company.

## **2. TOWARDS AND INTEGRATIVE APPROACH TO ENERGY JUSTICE: A LITERATURE REVIEW**

Considered as a relatively new research area, energy justice emerged from the studies on environmental justice (Yenneti and Day, 2015; Sovacool and Dworkin, 2015; Heffron et al., 2015; Chatterton et al., 2016). In the same perspective, Jenkins et al. (2016, p. 174) allege that energy justice arose from a new agenda of social sciences and “seeks to apply justice principles to energy policy, energy production and systems, energy consumption, energy activism, energy security and climate change”.

The concept of energy justice is defined by Sovacool and Dworkin (2015, p.436) as “a global energy system that fairly disseminates both the benefits and costs of energy services, and

one that has representative and impartial energy decision-making”. In this respect, energy justice involves three key elements: distribution of costs and externalities through the society, distribution of benefits with the society, and procedures, ensuring that decision-making processes are representative and respect due processes (Sovacool et al., 2016). Accordingly, Heffron and McCauley (2014, p. 437) allege, “energy justice aims to provide all individuals, across all areas, with safe, affordable, sustainable and secure energy sources”.

Goldthau and Sovacool (2012), consider energy injustice as the lack of access to modern sources of energy (i.e. billions of people living on energy poverty), thus, energy justice can be achieved when all people can have access to modern sources of energy, running out poverty. In this regard, the authors recognize three main challenges for global energy systems: energy security, energy justice, and low carbon energy transition (Goldthau and Sovacool, 2012, p.236).

According to Jenkins et al. (2016, p.175), energy justice “evaluates where injustices emerge, which affected sections of society are ignored, which processes exist for their remediation in order to reveal, and reduce such injustices”. Thus, energy justice enables the identification of injustices and the development of processes to avoid and remediate it, it also “provides a new framework for bridging existing and future research on energy production and consumption, both of which can subscribe to the common goal of achieving just energy-based processes and outcomes” (Jenkins et al., 2016, p.175).

Yenneti and Day (2015) also indicate some matters of interest to energy justice: fuel poverty, energy access, ethical energy consumption, renewable energy development and global coverage. Therefore, energy and fuel poverty can be considered major energy justice and policy concerns (Sovacool, 2015; Walket et al., 2016). According to Walker et al. (2016), energy poverty is the lack of access to affordable energy. Walker and Day (2012, p.69), state that “addressing fuel poverty has to involve seeking justice in terms of the cultural and political recognition of vulnerable and marginalised social groups and pursuing procedural justice through opening up involvement and influence in decision-making processes”.

Walker and Day (2012), Heffron and McCauley (2014), Heffron et al. (2015) identify three key elements of energy justice: distributional justice, procedural justice and justice as recognition. Distributional justice is related to a more inclusive and broad energy system. Procedural justice refers to the use of equitable procedures that inform and allow all stakeholders to participate in the decision-making. Justice as recognition means, “individuals must be fairly represented”, having equal political rights. In this regard, Walker et al. (2016)

also highlight the importance of participatory processes to define the necessities of a society and engaging people in policy-making.

Still, “the relationship between energy and justice is multifaceted, comprising distributional and procedural elements in relation to both production and consumption, drawing out inequalities not only on the basis of social and spatial patterns but also wider characteristics of vulnerability” (Fuller and McCauley, 2016, p. 2). Thus, the United Nations Development Programme (Newell et al., 2011) also reinforce the importance of procedural justice, with participatory and transparent institutions to straighten energy justice.

By presenting the case of a solar energy park, Yenneti and Day (2015, p. 672) indicate that “procedural justice principles-providing detailed information, valuing local knowledge, listening to the communities through responding to their concerns, and securing the involvement of all affected communities” are important for both acceptances of the project and mitigation of externalities, and to promote a distributive justice. Thus, failures in procedural justice can increase energy injustices, increasing inequality, and reducing the acceptability of a project (Yenneti and Day, 2016).

McCauley et al. (2016, p. 141) consider energy justice as “a new framework for assessing the justice implications – or simply the injustices – of current policy decisions as well as making practical recommendations”. By developing an energy justice metrics, Heffron et al. (2015, p.169) allege that energy justice can achieve a “just and equitable balance between the three dimensions of the Energy Trilemma” (i.e. the energy trilemma is the relations among energy finance, energy security, and climate change mitigation), diminishing injustices through fair policies.

Considering that people living below the poverty line pay proportionally more for energy, it impeded them to accumulate wealth and run out of poverty (Sovacool and Brown, 2010; Goldthau and Sovacool, 2012), emphasizing energy injustice. In this respect, Hall (2013) promotes the debates on the importance of ethical consumption to promote energy justice.

The concept and implications of energy justice are intrinsically connected to ethical debates and, consequently, good governance. According to Sovacool and Dworkin (2015, p.436), energy justice goes beyond philosophical debates and “can directly impact community livelihoods and the bottom line of energy corporations”. Thus, “psychological research has suggested that one of the most powerful predictors of the intention to take energy problems seriously, or to change energy related lifecycles or decisions, is who the respondent blames for energy problems” (Sovacool and Dworkin, 2015, p.436).

Sovacool and Dworkin (2015, p.437) also propose key elements of energy justice: first, “costs, or how the hazards and externalities of the energy system are imposed on communities unequally, often the poor and marginalized”. Second, “Benefits, or how access to modern energy systems and services are highly uneven”. Third, “Procedures, or how many energy projects proceed with exclusionary forms of decision-making that lack due process and representation”.

Still according to Sovacool and Dworkin (2015, p.437), energy justice can be achieved when these three elements are considered and respected, promoting benefits to producers and consumers, also enabling the fair share of costs with all stakeholders of a project. It also would guarantee that “energy procedures are fair and that stakeholders have access to information and participation in energy decision-making” (Sovacool and Dworkin, 2015, p.437).

Demski et al. (2015, p. 66) indicate that among key public perspectives on their acceptance of sustainable energy transitions, there are “social justice and fairness”, meaning that energy systems are developed in respect to “people’s abilities to live healthy lives”, resulting from a fair, inclusive and transparent process to all stakeholders.

Energy justice emphasize the social implications of energy, going beyond technological matters, it involves how the energy is produced, what are its costs, who have access to it, and create a community/holistic sense of responsibility for it. Thus, Sovacool and Dworkin (2015, p. 437) also allege that by exhausting current energy resources, it will be necessary to find substitutes to them (e.g. through renewable energies), though it still necessary to determine how to make this transition and how its costs will be shared.

The complexities of social responsibilities practices have evolved from the attendance to legal/normative determinations to will of organizations to promote sustainable development. Accordingly, social responsibility of organizations can be defined as the voluntary will to perform its economic responsibilities, going beyond legal obligations, being ethics in their behavior and observing the impact of their actions on the stakeholders, further contributing to global sustainability (Sarkar and Searcy, 2016; Palihawadana et al., 2016; Maas and Reniers, 2014; Benites-Lazaro and Mello-Théry, 2017).

Justice is a central element to the well function of societies, so consultation processes with the community influenced by a project are essential to increase its acceptability and fairness. Still, by analyzing the outcomes of a wind farm pilot study, Gross (2007, p. 2727) concluded that “perceptions of fairness do influence how people perceive the legitimacy of the outcome, and that a fairer process will increase acceptance of the outcome”. In the same way, Swofford and Slattery (2010, p. 2517) also recognize that, especially for energy projects,

“increasing levels of public participation during the early stages of a project will increase the likelihood of a project being accepted by the public”. Still presenting the case of wind energy projects, Cowell et al. (2011) allege that the benefits of such projects to the communities directly influenced, can only be achieved by involving the community in the decision-making process, also empowering them to veto the project if needed.

In the same way, Toke et al. (2008, p. 1136) allege that “when investors come from outside the community or when higher tiers of government try to site wind power facilities without involving local communities, they may easily create mistrust and the process can be perceived as unfair. It has been argued that developers will have greater success if they involve the local community (the public, as well as stakeholders) in decisions”. Swofford and Slattery (2010) also indicate that this participation in early stages of the project “can consist of a variety of formats including survey questionnaires, public meetings, focus groups, and semi-structured interviews”.

### **3. METHODS**

This study is a qualitative analysis of a case study (i.e. the social responsibility practices of a power generation company through its Environmental Park). The object of study is Engie Brasil, a company dedicated to the development, implementation and management of electricity power plants, more specifically, its Environmental Park opened in 2014.

The data was collected mainly from in-depth interviews with two managers of the company through semi structured interview questions: the first interviewee was the manager of the Environmental Park (I1) and the second was the sustainability consultant of the company (I2). Before the beginning of the interview, both interviewees assigned the free and informed consent form, respecting ethics in qualitative research. Thus, they were informed about the research purposes and objectives *to explore how energy justice, as a source of social responsibility, is approached in practice*. The interviews were made in February 2017 and, due to the small but representative sample, there was no interference for data collection and the analysis relied mainly on qualitative/interpretivist methods (Creswell, 2007; Bardin, 2011). According to the procedures indicated by Bardin (2011) on in-depth analysis of the interviews, the analysis was based on: Pre-analysis to organize and prepare data for the analysis; Review of the material collected and categorization; and the final analysis of the results, with reflexive and critical review of the interviews for the interpretation of meanings.

Accordingly, the main procedures of this research were: Literature review to understand energy justice and its main principles, selection of the case study, development and application

of interviews, and analysis of the data collected from the interviews related to the principles of energy justice gathered from the scientific literature.

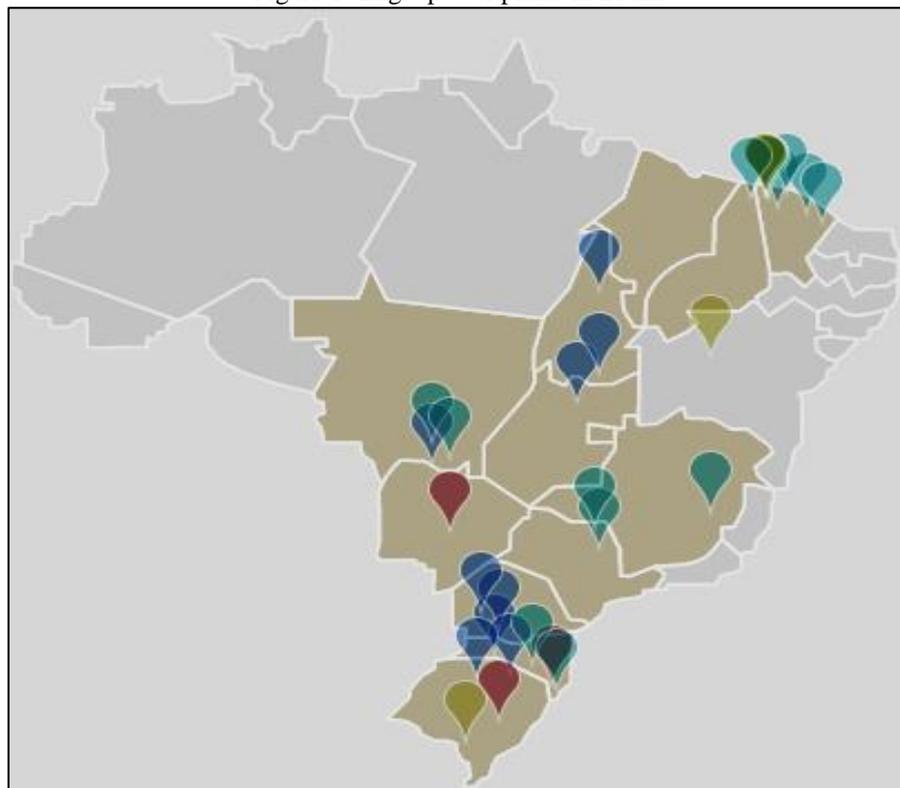
#### **4. CASE STUDY: ENGIE BRASIL**

Earlier named Tractebel Energia, the company was bought by Engie in 2016, and the core business of the company is the power generation. The company have the installed capacity to produce 7,010 MW, equivalent to 6.2% of total Brazilian needs per year and nearly 5% of the total installed capacity in Brazil - i.e. which was equivalent to 140.858 MW in 2015 (Brazilian Energy Balance, 2016; Engie, 2017a).

The company have 29 power plants in Brazil, nine of them are hydroelectric power plants, four thermoelectric power plants, and sixteen complementary plants based on: three biomass plants, nine windfarms, three small hydropower plants and a solar park (Engie, 2017a). Engie Brasil is controlled by the French-Belgian group Engie, which is the largest independent power producer in the world with an installed capacity of 117 GW. In 2016, Engie Brasil valued nearly 5 billion dollars, employing more than a 1000 people (Engie, 2017a).

Engie, the largest private energy generation company in Brazil, has its headquarter based on Florianopolis, in the south of the country. The company has power plants in many parts of the country, as it is illustrated on Figure 1 (Engie, 2017a).

Figure 1- Engie power plants in Brazil



Source: Engie, 2017a

The main installed electricity generation capacity of the company in Brazil is illustrated on Table 1.

Table 1 - Installed electricity generation capacity of the company in Brazil

<i>Hydroelectricity Power Plants</i>		<i>Thermoelectricity Power Plants</i>		<i>Additional Sources (Eolic, solar, Small Hydropower Plants)</i>	
<i>Power Plant</i>	<i>Installed Capacity (MW)</i>	<i>Power Plant</i>	<i>Installed Capacity (MW)</i>	<i>Power Plant</i>	<i>Installed Capacity (MW)</i>
Caná Brava	<b>450</b>	Jorge Lacerda A	<b>0</b>	Areia Branca	<b>20</b>
Estreito	<b>436</b>	Jorge Lacerda A1 - 2 X 50 MW	<b>100</b>	Beberibe	<b>26</b>
Itá	<b>1.127</b>	Jorge Lacerda A2 - 2 X 66 MW	<b>132</b>	Cacimbas	<b>19</b>
Machadinho	<b>404</b>	Jorge Lacerda B	<b>262</b>	Estrela	<b>19</b>
Passo Fundo	<b>226</b>	Jorge Lacerda C	<b>363</b>	Ferrari	<b>81</b>
Ponte de Pedra	<b>176</b>	William Arjona	<b>190</b>	Fleixeiros I	<b>30</b>
Salto Osório	<b>1.078</b>			Fotovoltaica Cidade Azul	<b>3</b>
Salto Santiago	<b>1.420</b>			Guajiru	<b>30</b>
São Salvador	<b>243</b>			Ibitiúva	<b>23</b>
				José Gelazio	<b>24</b>
				Lages	<b>28</b>
				Mundaú	<b>30</b>
				Pedra do Sal	<b>18</b>
				Rondonópolis	<b>27</b>
				Santa Mônica	<b>19</b>
				Trairí	<b>25</b>
				Tubarão	<b>2</b>

Source: Engie, 2017a

#### 4.1. THE PROJECT

The Environmental Park was inaugurated in 2014, in Capivari de Baixo, a city located in the South of Brazil. The park was designed in a collaboration between five institutions: Engie Brasil (former Tractebel), which was the founder and financier of the project; the University of Southern Santa Catarina (Unisul); the University of Capivari de Baixo (FUCAP); the Association of Municipalities of the Laguna region (AMUREL), and the Association of Tractebel Energia and Eletrosul Employees (ASES) (Engie, 2017a).

The idea of building the Environmental Park emerged from the will to recover the area occupied by the Thermoelectric Complex Jorge Lacerda (which the main good for energy production was coal) and improve the quality of life in the surrounding communities. The exploitation of coal was the main activity responsible for the economic development of the southern cities in Brazil between 1940 and 1980. In 1960, with the possibility to use

metallurgical coal for thermoelectricity generation, the Thermoelectric Complex Jorge Lacerda was constructed (Engie, 2014).

The wastes produced by the burning of coal in Brazil is the largest source of resources for thermoelectricity generation in the country. The environmental impacts produced by these power plants are mainly characterized by the incorrect waste disposal, by the particles (heavy and light ashes) emitted as pollutants in the air, soil and water, and high greenhouse gas emissions (Barros, 2013; Alves et al., 2011). Accordingly, power generation companies might develop and adopt responsible and sustainable technologies and practices to avoid negative social and environmental impacts, reducing the amount of pollutants produced (i.e. reducing greenhouse gas emissions, sustainably managing its wastes disposal, and attending to the main regulation policies and civil responsibilities) (García-Ubaque et al., 2013; Barros, 2013; Alves et al., 2011).

Due to the tons of residues emitted by these practices, the production of metallurgical coal and its use for thermoelectricity generation, creates several externalities for both the environment and the communities in the surroundings. The tons of wastes generated by the burning of metallurgical coal from the Thermoelectric Complex Jorge Lacerda was stored/disposed on the ground for many year, without any environmental control or monitoring of its impacts for neither human population, nor the environment. Only by the end of 2008, after removing 2.1 million tons of coal disposed on the ground, with an investment of nearly 2 million dollars, Tractebel (the former company bought by Engie) accomplished the recovery of the area currently used by the Environmental Park. (Engie, 2014).

Currently the park is a space for community leisure, disposing of: Center for Culture and Sustainability, Theater with 370 seats, Exhibition space with 730 m<sup>2</sup>, Outdoor Plants parts Museum, Multipurpose area for recreation, Acoustic shell for shows for up to 30 thousand people, Space for gymnastics, 3.5 thousand meters of bike paths, 4 thousand meters of hiking trails, Photovoltaic module that can supply the needs of up to 30% of the park and lake with 14,500 m<sup>2</sup>. Therefore, all this infrastructure resulted in the improvement of air quality and the better utilization of the area. (Engie, 2014).

## **5. RESULTS AND DISCUSSION**

Transparency and ethics are at the core of energy justice and the social and environmental responsibility of organizations, demanding them to seek the wellbeing of the communities affected by their actions (Sovacool and Dworkin, 2015; Yenneti and Day, 2015;

Hall, 2013). Therefore, despite the broadness of the term, energy justice is related to the promotion of clean, renewable, accessible and affordable energy to all, produced in safe ways to both society and the environment, attending to three dimensions: procedural justice, distributional justice and justice as recognition (Sovacool et al., 2016; Yenneti and Day, 2015; Walker and Day, 2012; Heffron and McCauley, 2014; Heffron et al., 2015; Fuller and McCauley, 2016; Newell et al., 2011; Sovacool and Dworkin, 2015).

Thus, organizations might avoid externalities that affects the communities, but they must compensate these externalities whenever it happens, also promoting tools to improve the wellbeing of these communities and enabling them to benefit from the organizations' activities (Sovacool and Dworkin, 2015; Walker et al., 2016; Swofford and Slattery, 2010). Energy justice require more transparency and engagement of civil society in decision making processes, raising awareness about the organization's plans and activities, increasing its acceptability and legitimacy (Sovacool et al., 2016; Walker et al., 2016; Newell et al., 2011; Gross, 2007; Cowell et al., 2011; Toke et al., 2008; Swofford and Slattery, 2010).

Table 2- Main dimensions of energy justice

<i>Dimension</i>	<i>Definition</i>	<i>Author</i>
Procedures	It is related to the development of transparent, fair and equitable procedures "that inform and allow all stakeholders to participate in the decision-making".	Sovacool et al., 2016; Yenneti and Day, 2015; Walker and Day, 2012; Heffron and McCauley, 2014; Heffron et al., 2015; Fuller and McCauley, 2016; Newell et al., 2011; Yenneti and Day, 2016; Sovacool and Dworkin, 2015
Distribution and Inclusion	It is related to the access of all people to modern energy, broadening energy systems, promoting inclusion and development.	Sovacool et al., 2016; Yenneti and Day, 2015; Walker and Day, 2012; Heffron and McCauley, 2014; Heffron et al., 2015; Fuller and McCauley, 2016; Sovacool and Dworkin, 2015
Justice as Recognition	It is related to the acceptability of an activity of project by the community affected/influenced by it. Therefore, it requires the engagement of all possible stakeholders, their awareness and their empowerment in decision making.	Sovacool et al., 2016; Walker and Day, 2012; Heffron and McCauley, 2014; Heffron et al., 2015; Walker et al., 2016; Newell et al., 2011; Sovacool and Dworkin, 2015

Source: Research data (2016).

The development of interviews demonstrated the applicability of energy justice principles in a power generation company, specifically regarding the development and maintenance of a community park to increase the community's wellbeing and reduce the negative impacts of the organizations' activities in the past.

The understanding of the interviewees regarding energy justice are: I1 "*My knowledge about energy justice is very shallow, I understand that should be a very new topic. I think energy justice is linked to not allowing electricity shortages, for it to be used in actions of [...] subsistence of the population and what is necessary for production, to meet the primary*

*elements of production of a given community” accordingly I2 understand the term as “My conception today is more on the basis of distributed generation than in the centralized one. The Brazilian project light for all [Luz para todos], has its merits. Now solar energy is becoming cheaper, this has already happened and would be in my view the great solution for a country like Brazil, with so many areas still isolated, with so much social need, is the prospect of exchanging energy with local concessionaires, and this, with a distribution network”.*

When asked if and how the company embraces energy justice, the interviewees answered that I1 *“Within the environmental park of Tractebel, we predict that in the future each unit will be autonomous in its energy production, ie ... There is inside the environmental park a pilot production of energy through solar panels. We see that the conversion capacity in solar and electric energy in the country, and in that region, is very large”*, thus, I2 stated that *“Engie and energy justice: This is one of Engie's mottos of the parent company in Paris. Energy is an essential good for life, that's the idea. Even Engie has a very interesting initiative called ‘le rationnement de l'énergie’. The group now focuses on three axes: decentralization, digitization and decarbonization”*.

Both interviewees stated that the organization developed the park to diminish its environmental impacts by recovering the quality of the soil (i.e. which served as a disposal of wastes of the power plant), to improve the wellbeing and the quality of life of local population that suffered from low infrastructure for leisure in the region and from bad air quality in the cities due to the gases emitted by the power plant. According to E1, the private investments made by the company was based on 1<sup>st</sup> soil recovery over the sedimentary basins and coal deposit, 2<sup>nd</sup> addition of layers of quality/fertile soil, 3<sup>rd</sup> reforestation with native/endemic species, 4<sup>th</sup> development of installations for maintenance of the park and facilities for community's leisure and entertainment that *“has changed all the dynamics of the surrounding cities”*.

Both interviewees highlighted the initiative of the company supported by the engagement of Unisul, the AMUREL, and the government of Capivari de Baixo, was essential to develop, implement and maintain the park and ensure its acceptability, legitimacy and success.

When asked if/how the community was involved in the project, I2 answered that *“the community participated in the idealization of the park, mainly through the association of the residents of the region”* and still *“this association has a voice in the administration of the park”*. I2 emphasized that the park raises awareness about sustainability issues by enabling the community to have contact with solar panels and wind power generators, and with other

mechanisms in the park such as lectures, rainwater storage and recycling. Thus, considering that the region lack of resources and infrastructure “the park was a considerable increment in both leisure and culture” for the surrounding cities.

According to I1 and I2, the park receives nearly 100 thousand visitors per year and it is free of charges for visitors. They also stated that the park is seeking for sustainability in all its dimensions including economic sustainability and financial autonomy from the company, by defining an annual cultural agenda supported by federal/governmental financial programs/aids.

Further explaining the benefits of the park, E1 stated that comparing to the total profits earned by the company, the development and maintenance of the park is very small and contributes not only to increase the quality of life of the population, but also you improve the company's social balance and its brand, and increase the willingness of the employees that in majority live in the surrounding cities, enhancing their psychological bound with the company.

Regarding the three dimensions of energy justice presented (i.e. Procedures, Distribution and Inclusion, and Justice as Recognition), it is possible to interpret the discourse of the interviewees as if the company, particularly regarding the development and maintenance of the Environmental Park, attended to these principles, as it is illustrated in Table 3.

Table 3- Implementation of energy justice principles and responsibilities by Engie through the Environmental Park

<i>Dimension</i>	<i>I1</i>	<i>I2</i>
Procedures	The local community was engaged in the development and implementation of the park, being aware and being consulted about all its actions.	The local community, local higher education institutions and the local government were aware of the project for developing the park and were engaged with it. Thus, the monitoring and follow up of the project is made by the number of people visiting the park and attending to the events and courses promoted by the park.
Distribution and Inclusion	The development of the park attending to sustainability criteria (i.e. storing rainwater and saving and reusing water, and producing renewable energy) people had access to these technologies, increasing their awareness.	The implementation of solar panels and an Eolic generator in the park allow people to have access to modern energy production, raising awareness and knowledge in the community.
Justice as Recognition	In order to reduce the externalities of the thermoelectric power plant of Capiravi de Baixo and engage the community in the development, implementation and use of the park, the company consulted them about their preferences. To avoid the development of a park that wouldn't be used by the community, the company developed socioenvironmental activities, sociocultural activities and activities related to culture, leisure, education and entertainment, attracting people to the park and its activities.	The stakeholders, especially the local community influenced by the project, were engaged sensitized since the beginning of the project in a collaboration between higher education institutions, the local government, the civil society and the company. Thus, the community still have a seat in the management of the park.

Source: Research data (2016).

## 6. CONCLUSIONS

By reviewing the scientific literature, it is noticeable the increase of publications on energy justice, however, it is necessary to further understand the scope of this emerging area. In this regard, by analyzing practical/specific realities, case studies could support the consolidation of this emerging area in the literature.

The increasing societal demands for more responsibility, transparency, accountability, ethics and sustainability of public and private organizations require these institutions to transform themselves in drivers of societal change towards more equitable, justice and sustainable development path. Among the different paths to meet these demands social services and community engagement and empowerment appear to be a reasonable solution. Therefore, organizations, particularly power generation companies, are seeking to promote actions that reflect their responsibility and commitment to social development and environmental protection when planning, developing and implementing their projects. Also, creating mechanisms and environments to improve the community's wellbeing.

According to the main dimensions of energy justice (Table 2), the company regarded the concept of energy justice, attending to its social responsibilities within the community, recovering the degraded area and returning it to the community as a source of leisure, culture and education, involving them in the planning, development and maintenance of the park (Procedural justice). Thus, by empowering the community, including them in the processes and promoting renewable energy generation that meet the park's needs and allow the community to use this energy freely (Distributional justice and Inclusion), the company increased its image/brand, increasing its acceptability and the legitimacy of its actions, also enhancing the psychological bond of the community to the company (Justice as Recognition).

## REFERENCES

- Alves, M. R., Rodríguez, M., & Roseta-Palma, C. (2011). Sectoral and regional impacts of the European carbon market in Portugal. *Energy Policy*, 39(5), 2528-2541.
- Bardin, Laurence. 2011. *Análise de Conteúdo*. São Paulo: Edições 70.
- Barros, J. (2013). Performance measurement of thermoelectric generating plants with undesirable outputs and random parameters. *International Journal of Electrical Power & Energy Systems*, 46, 228-233.
- Benites-Lazaro, L. & Mello-Théry, N. 2017. CSR as a legitimizing tool in carbon market: Evidence from Latin America's Clean Development Mechanism. *Journal Of Cleaner*

- Production*, 149, 218-226. Doi:10.1016/j.jclepro.2017.02.095 (Accessed on 31.03.2017).
- Brazilian Energy Balance. 2016. Brazilian Energy Balance: Final Report 2016. Available at: [https://ben.epe.gov.br/downloads/Relatorio\\_Final\\_BEN\\_2016.pdf](https://ben.epe.gov.br/downloads/Relatorio_Final_BEN_2016.pdf) (Accessed on 27.03.2017).
- Chatterton, T.J., Anable, J., Barnes, J. & Yeboah, G. 2016. Mapping household direct energy consumption in the United Kingdom to provide a new perspective on energy justice. *Energy Research & Social Science*, (in press). Doi:10.1016/j.erss.2016.04.013 (Accessed on 26.06.2016).
- Cowell, R., Bristow, G. & Munday, M. 2011. Acceptance, acceptability and environmental justice: the role of community benefits in wind energy development. *Journal of Environmental Planning and Management*, 54, 539–557. Doi: 10.1080/09640568.2010.521 047 (Accessed on 27.06.2016).
- Creswell, John. 2007. Projeto de Pesquisa: Métodos qualitativo, quantitativo e misto. Porto Alegre: Artmed.
- Demski, C., Butler, C., Parkhill, K.A. & Spence, A. 2015. Public values for energy system change. *Global Environmental Change*, 34, 59–69. Doi:10.1016/j.gloenvcha.2015.06.014 (Accessed on 26.06.2016).
- Engie. 2014. Parque Ambiental Tractebel completa um ano. Available at: [http://www.engieenergia.com.br/wps/wcm/connect/087ce848-b745-4ae3-b123-b37b41607b87/WEB\\_tcb\\_revista\\_boasnovas\\_n51.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE087ce848-b745-4ae3-b123-b37b41607b87](http://www.engieenergia.com.br/wps/wcm/connect/087ce848-b745-4ae3-b123-b37b41607b87/WEB_tcb_revista_boasnovas_n51.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE087ce848-b745-4ae3-b123-b37b41607b87) (Accessed on 27.03.2017).
- Engie. 2017a. The Company. Available at: <http://www.engieenergia.com.br/wps/portal/internet/a-companhia> (Accessed on 27.03.2017).
- Fuller, S. & McCauley, D. 2016. Framing energy justice: perspectives from activism and advocacy. *Energy Research & Social Science*, 11, 1–8. Doi: 10.1016/j.erss.2015.08.004 (Accessed on 27.06.2016).
- García-Ubaque, C.A., González-Hässig, A., Vaca-Bohórquez, M.L., 2013. Ceramic bricks made from municipal solid waste incineration-derived clay and ashes: a quality study. *Ingeniería Investigación* 33 (2), 36–41. (Accessed on 31.03.2017).
- Goldthau, A. & Sovacool, b.k. 2012. The uniqueness of the energy security, justice, and governance problem. *Energy Policy*, 41, 232–240. doi:10.1016/j.enpol.2011.10.042 (Accessed on 26.06.2016).
- Gross, C. 2007. Community perspectives of wind energy in Australia: The application of a justice and community fairness framework to increase social acceptance. *Energy Policy*, 35, 2727–2736. doi:10.1016/j.enpol.2006.12.013 (Accessed on 27.06.2016).

- Hall, S.M. 2013. Energy justice and ethical consumption: comparison, synthesis and lesson drawing. *Local Environment: The International Journal of Justice and Sustainability*, 18, 422-437. Doi: 10.1080/13549839.2012.748730 (Accessed on 27.06.2016).
- Heffron, R.J. & McCauley, D. 2014. Achieving sustainable supply chains through energy justice. *Applied Energy*, 123, 435–437. Doi:10.1016/j.apenergy.2013.12.034 (Accessed on 26.06.2016).
- Heffron, R.J., McCauley, D. & Sovacool, B.K. 2015. Resolving society's energy trilemma through the Energy Justice Metric. *Energy Policy*, 87, 168–176. Doi: 10.1016/j.enpol.2015.08.033 (Accessed on 26.06.2016).
- Jenkins, K., McCauley, D., Heffron, R., Stephan, H. & Rehner, R. 2016. Energy justice: A conceptual review. *Energy Research & Social Science*, 11, 174–182. Doi:10.1016/j.erss.2015.10.004 (Accessed on 26.06.2016).
- Maas, S. & Reniers, G. 2014. Development of a CSR model for practice: connecting five inherent areas of sustainable business. *Journal Of Cleaner Production*, 64, 104-114. Doi:10.1016/j.jclepro.2013.07.039 (Accessed on 31.03.2017).
- McCauley, D., Heffron, R., Pavlenko, M., Rehner, R. & Holmes, R. 2016. Energy justice in the Arctic: Implications for energy infrastructural development in the Arctic. *Energy Research & Social Science*, 16, 141–146. Doi:10.1016/j.erss.2016.03.019 (Accessed on 27.06.2016).
- Newell, P., Phillips, J. & Mulvaney, D. 2011. Pursuing Clean Energy Equitably. United Nations Development Programme: New York. Available at: <https://drive.google.com/drive/folders/0BxYM0LpfyZyhSVhnREpfZVVHTjQ> (Accessed on 26.06.2016).
- Palihawadana, D., Oghazi, P. & Liu, Y. 2016. Effects of ethical ideologies and perceptions of CSR on consumer behavior. *Journal Of Business Research*, 69 (11), 4964-4969. Doi:10.1016/j.jbusres.2016.04.060 (Accessed on 31.03.2017).
- Sarkar, S. & Searcy, C. 2016. Zeitgeist or chameleon? A quantitative analysis of CSR definitions. *Journal Of Cleaner Production*, 135, 1423-1435. Doi:10.1016/j.jclepro.2016.06.157 (Accessed on 31.03.2017).
- Sovacool, B.K. & Brown, M.A. 2010. Competing Dimensions of Energy Security: An International Perspective. *Annual Review of Environment and Resources*, 35, 77–108. doi:10.1146/annurev-environ-042509-143035 (Accessed on 27.06.2016).
- Sovacool, B.K. & Dworkin, M.H. 2015. Energy justice: Conceptual insights and practical applications. *Applied Energy*, 142, 435–444. Doi:10.1016/j.apenergy.2015.01.002 (Accessed on 26.06.2016).
- Sovacool, B.K. 2015. Fuel poverty, affordability, and energy justice in England: Policy insights from the Warm Front Program. *Energy* 93, 361-371. Doi:10.1016/j.energy.2015.09.016 (Accessed on 26.06.2016).
- Sovacool, B.K., Heffron, R.J., McCauley, D. & Goldthau, A. 2016. Energy decisions reframed as justice and ethical concerns. *Nature Energy*, 1, 1-6. Doi: 10.1038/NENERGY.2016.24 (Accessed on 27.06.2016).

- Swofford, J. & Slattery, M. 2010. Public attitudes of wind energy in Texas: Local communities in close proximity to wind farms and their effect on decision-making. *Energy Policy*, 38, 2508–2519. doi:10.1016/j.enpol.2009.12.046 (Accessed on 27.06.2016).
- Toke, D., Breukers, S., Wolsink, M. 2008. Wind power deployment outcomes: How can we account for the differences? *Renewable and Sustainable Energy Reviews*, 12, 1129–1147. doi:10.1016/j.rser.2006.10.021 (Accessed on 27.06.2016).
- Walker, G. & Day, R. 2012. Fuel poverty as injustice: Integrating distribution, recognition and procedure in the struggle for affordable warmth. *Energy Policy*, 49, 69–75. doi:10.1016/j.enpol.2012.01.044 (Accessed on 27.06.2016).
- Walker, G., Simcock, N. & Day, R. 2016. Necessary energy uses and a minimum standard of living in the United Kingdom: Energy justice or escalating expectations? *Energy Research & Social Science*, (in press). Doi:10.1016/j.erss.2016.02.007 (Accessed on 26.06.2016).
- Yenneti, K. & Day, R. 2015. Procedural (in)justice in the implementation of solar energy: The case of Charanaka solar park, Gujarat, India. *Energy Policy*, 86, 664–673. Doi:10.1016/j.enpol.2015.08.019 (Accessed on 26.06.2016).
- Yenneti, K. & Day, R. 2016. Distributional justice in solar energy implementation in India: The case of Charanka solar park. *Journal of Rural Studies*, 46, 35-46. Doi:10.1016/j.jrurstud.2016.05.009 (Accessed on 27.06.2016).