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Reaching the sustainable development goals 2030: energy efficiency as an approach to corporate social responsibility (CSR)

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Abstract It has been widely contended that corporate social responsibility (CSR) is an ambiguous concept that fails to strike the right balance between corporate economic interests and social demands. The present article argues that energy efficient principles can be used as a CSR tool to fulfill the sustainable development goals in the UN's agenda 2030, so responding to the demands of a range of stakeholders while strengthening profitability. To advance the argument that energy efficiency principles can help to operationalize CSR, an extensive literature analysis was conducted to assess the state of the art in relation to CSR and energy efficiency. The findings confirm the effectiveness of energy efficiency initiatives in responding to the social demands of The Sustainable Development Goals, specifically goal 7, while increasing profitability and/or saving cost. The paper also highlights how energy efficiency can be reported quantitatively in environmental and economic terms beyond narrative reports, so addressing an implied critique of CSR initiatives. The paper concludes that energy efficiency initiatives create competitive advantages informed by the highest ethical principles, with benefits for corporations and society.

Keywords Energy efficiency · CSR · SDG 2030, Corporate sustainability

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Introduction

In recent years, corporate social responsibility (CSR), has been intensely discussed by international institutes, governments, business leaders and civil society as a commonly agreed means of tackling environmental and social problems (Ely et al. 2013), with a growing sensitivity to companies' context as well as their performance (Hohnen 2007). However, there is still a lot of skepticism about it, despite the fact that more and more companies are adopting CSR policies, accidents and situations of irresponsibility on the part of companies abound (Wagner et al. 2009). This suggests that there is a lack of adequate strategies and tools to achieve the CSR objectives (Hadjimanolis 2018).

By addressing climate change issues, companies may choose to include energy and carbon reduction initiatives as a part a wider CSR policy or as a standalone policy (UNIDO 2011), facing new opportunities to make significant savings through energy efficiency (Kauffmann and Less 2009). Both energy savings and energy efficiency have been considered elements positively associated with CSR efforts (Block 2016; Hori et al. 2014). Furthermore, initiatives towards reducing carbon dioxide (CO_2) emission derived from energy consumption can be promoted through CSR as a catalyst to enhancing communication between energy specialists, along with other key stakeholders like end-users, financiers and authorities (Uusimaa Regional Council 2007).

Due to a limited discourse on linking energy efficiency and CSR, the present article argues that energy efficiency principles can be used as a CSR tool to fulfill the Sustainable Development Goals in the 2030 Agenda for Sustainable Development, responding to the demands of a range of stakeholders while strengthening profitability. This paper is divided into the following sections: after the introduction is the description of the materials and methods, subsequently, is the literature review that includes Corporate social responsibility (CSR) in the face of global challenges, Sustainable Development Goals 2030, and Energy Efficiency and Social Demands. Afterward, the sections for discussion and conclusion are provided.

Materials and methods

This conceptual article aims to develop a theory of how energy efficiency principles can be used as a CSR tool to fulfill the Sustainable Development Goals in the 2030 Agenda for Sustainable Development. To that end, an extensive literature analysis was conducted; as a tool to assess the state of the art of a particular field of knowledge, the review must follow *well-defined protocols to locate existing studies, select and evaluate the contributions, then analyze and synthesize the data, and finally present the main findings* (de Oliveira et al. 2017). A purposive-criterion sampling approach was used to select relevant contributions since, according to Palys (2008), the researcher sees sampling as a series of choices about how "one does one's research," meeting certain criteria and, in this case, contributions were subjected to critical scrutiny, using content analysis of the selected articles to examine support for the proposed theory. The review draws on relevant data from books, reports from international organizations and international research journals indexed in ABI/INFORM, EBSCO, JSTOR, and ScienceDirect, among others.

Corporate social responsibility (CSR) in the face of global challenges

With the rise of the global problems, such as global warming and climate change, CSR become an important strategy for sustainability issues, especially for international corporations (Stevelman 2009; UK Essays 2016). Based on a review of the literature on political CSR, Scherer (2017) recently noted that the heterogeneity of the field meant that a broad range of perspectives and theories have been deployed in prior research. Frigant (2015) suggested that while it serves corporate interests to be socially responsible, this is done in an isolated way rather than through interfirm interaction. As a consequence, CSR reporting remains problematic because sometimes they are considered too soft (Rosen-Zvi 2011) or because of its lack of standardization, which reduces it to narrative reports (Russell 2014). Perhaps, for this reason, there is a lot of skepticism about CSR initiatives (Banerjee 2008).

Increasingly, firms in all parts of the world, and especially in developing countries, seek to position themselves as socially responsible brands (Alvarado-

Herrera et al. 2017; Lund-Thomsen et al. 2016). This is commonly achieved by linking companies to different social causes in order to improve their corporate image (Luo and Bhattacharya 2006). This is important because a firm's reputation depends on maintaining a good image over time (Hasanbegović 2011). Building a good reputation requires time and expertise as well as perseverance in implementing CSR initiatives (Tran et al. 2015). As reputation can be easily damaged in a relatively short time (Foroudi et al. 2017), corporations criticized for controversial and stigmatized products, processes or services seek to restore their image by increased advertising of their CSR initiatives (Oh et al. 2017). These efforts to build and maintain a good reputation are not just a matter of making a good impression but also seek competitive advantage (Casimiro Almeida and Coelho 2017).

Firms address CSR engagement in different ways depending on a variety of elements; nevertheless, the nature of the business and the geographic location plays a crucial role in this matter (Baughn et al. 2007; Jose and Lee 2007; Wang et al. 2016). Although some studies suggest that rural firms tend to have a higher level of CSR than urban firms (Boeprasert 2012), there is evidence that "firms located close to major cities and financial centers exhibit higher CSR engagement compared to firms located in more remote areas" (Husted et al. 2015). Furthermore, geographic dispersion is negatively associated with CSR (Shi et al. 2017); conversely, the closer the companies are to each other, the more alike CSR policies they have because of the similar local factors such as the influence of their investors' customers, local competition, along with social interactions and peer effects (Chintrakarn et al. 2017). Additionally, the geography of companies supply chains deserves also attention because it can affect interactions between stakeholder pressure, supplier-related CSR practices, and performance, influencing thus mediation effects of the firms environmental and social performance (Haleem et al. 2017).

According to Hamilton (2011), four key issues of concern in geography research on CSR are: (1) translation, for example, the difficulty of translating some social and environmental problems into business risks limits the support of investors to CSR initiatives; (2) dilution, for example, corporations with flexible supply chains can evade new standards by shifting production to less regulated or less visible spaces; (3) access, for example, small-scale producers often lack sufficient resources to maintain new CSR standards and access ethical markets; and (4) embedding, for example, national and local institutions affect the nature of CSR initiatives developed in different countries, including the relative emphasis on the market in the face of regulatory imperatives, and the roles of different stakeholder groups.

The term CSR has evolved over several decades and now encompasses the interests of stakeholders, freedom of voluntary participation, to improve social and environmental conditions throughout developing innovative products processes and services that are economically viable (Hohnen 2007; Witkowska 2016). There is a widespread belief that economic rather than social or environmental interests motivate CSR practices (Barros et al. 2014), but regardless of the original motivation, each initiative needs the support of stakeholders (Bulgacov et al. 2015). Somewhat idealistically, social sustainability is of great interest to many stakeholders because of its potential synergy with corporations' environmental and economic interests (Galuppo et al. 2014). In practice, the integration of social, environmental and economic dimensions of sustainable development depends on the particular situation within the corporation. Stakeholders' perceptions define the extent of a corporation's social sustainability, which should increase customer loyalty and strengthen corporate image (Costa and Menichini 2013).

The terms CSR and sustainable development are often criticized as *contradictions in terms: one assumption being that corporations are incapable of social responsibility and the other being that sustainability of the planet and its resources and integrity is incompatible with economic and, in some cases, social development* (Moon 2007). Although CSR reports are sometimes criticized, they remain as a source of reliable information linked to companies' achievements related to practices aimed at slowdown climate change (Rosen-Zvi 2011). It seems true that sustainable development will always be influenced by profits creation strategies, focusing increasingly on financial performance—sometimes at the expense of social and environmental standards (Málovics et al. 2008). In addition, there is a normative assumption that cultural and structural differences between developing and developed countries determine how the transition to

sustainability occurs (Hansen et al. 2017; Lundvall et al. 2011; Mazurkiewicz 2004).

Nowadays, facing the climate change pressures either by focusing on direct impacts of geographical factors or on indirect effects on the socio-political environment, communication plays a critical role to disseminate CSR sustainability-related initiatives along organizations and with their main stakeholders, all within a greater coordinated corporate and industry effort (Allen and Craig 2016; Castells-Quintana et al. 2015).

Sustainable development goals 2030

As the world changes in so many ways to adjust unsustainable patterns in organizations, it is no longer possible to claim "business as usual." In response to these changes, the United Nations published the 2030 Agenda for Sustainable Development. This ambitious and comprehensive universal international agreement advances 17 Sustainable Development Goals that respond to the currently overwhelming demands of society, principally *to eradicate poverty, improve the living standards and well-being of all people, promote peace and more inclusive societies and reverse the trend of environmental degradation* (UNDP and UNRISD 2017).

The 2030 sustainability agenda differs from its predecessor, the Millennium Development Goals, in at least five respects: its universality, applying to everyone in all countries; the role of education and quality of learning in building a better world; the importance of environmental protection; the inclusion of peace as an explicit goal; and the incorporation of business (Caprani 2016). In pursuit of these sustainability goals, top managers must develop strategies that take account of the principles of sustainability, without affecting the quality of products and processes for continuing market relevance (Chabrak 2015). Ideally, the wide spectrum of corporate sustainability strategies should integrate the three dimensions of sustainable development into daily corporate activities; traditionally, however, most initiatives have focused on the environmental dimension, often with little integration into the organization's structure (Delai and Takahashi 2011).

Chief Executive Officers tend to differ in relation to how corporate sustainability should be integrated into their management systems (Rego et al. 2017), but regardless of their perspective, companies must remain economically and environmentally viable and must have society's acceptance (Fleming et al. 2017). To that end, objective and precise corporate sustainability reports would make it possible to assess sustainability performance (Laskar and Maji 2016), but such reports remain largely qualitative in nature (Husser et al. 2012). This limitation has its origins in definitional disagreements, allowing diverse CSR practices to flourish that are difficult to measure and quantify (Gjølberg 2009).

Because honesty is highly valued in this context, sustainability reporting must be sufficiently forthright to admit when a strategy has failed; indeed, this is likely to be understood as a sign that corporation takes sustainability very seriously (Sandberg and Holmlund 2015). One of the major barriers to objective sustainability reporting is the lack of key sustainability performance indicators, making it difficult to assess corporate sustainability (Oshika and Saka 2017); another is the inability to use existing tools (Hörisch et al. 2015). For that reason, there is a need for appropriate internal management control systems to assure acceptable performance (Wijethilake 2017). To the extent that corporations report CSR performance to stakeholders, this is usually on a voluntary basis; in most cases, energy efficiency appears to be a common denominator in sustainability targets, triggering initiatives on both supply and demand sides in support of energy security, competitiveness and environmental sustainability linked to economic growth (IEA 2014a). While decarbonizing fossil fuel-based energy sources can increase demand for a skilled workforce and so create economic growth, higher energy prices may stimulate energy efficiency-related job creation (McCollum et al. 2017).

In a business context, several of the sustainable development goals (SDGs) rely implicitly on the implementation of CSR initiatives. Explicitly, however, CSR is central to fulfilling Goal 7, which refers to ensuring access to affordable, reliable, sustainable and modern energy for all. One of its targets is to double the global rate of improvement in energy efficiency by 2030 (UN 2016). Goal 7 is related to other SDGs in several ways, such as eradicating poverty (Goal 1), promoting clean industry (Goal 9) and reducing greenhouse gas emissions that exacerbate climate change (Goal 14). As noted by former UN Secretary-

General Ban Ki-moon, "*energy is the golden thread*" that connects economic growth, increased social equity and environmental sustainability that allows the world to thrive (Ki-moon 2012; UN 2012).

Energy efficiency and social demands

Although it may seem incredible to those living in urban areas, the lack of energy services is a problem in many rural areas in developing countries (Terrapon-Pfaff et al. 2014). The production and distribution of electricity has created both environmental and human health risks for workers operating in adverse conditions, and for public health, as associated particles can create respiratory problems (Crane 2001). Population displacement due to environmental degradation is another current phenomenon that relates to global warming and energy issues (ECLAC 2013). In developing countries, population health is particularly affected by deficient and expensive energy services, especially in the poorest nations where the poverty-energy relationship is strongest as can be seen in Fig. 1 (Ezzati et al. 2004; IEA 2002). Energy scarcity and insecurity particularly affect women, who must allocate part of the limited household budget to energy resources (Ezzati et al. 2004).

Cleaner and more efficient methods of producing energy are required to counter the potential negative impacts of conventional energy technologies on society and the environment (Van Der Kroon et al. 2013). A multiple benefits approach to energy efficiency encompasses a wide range of potential positive social impacts that include health and well-being, resource management, disposable income, lower consumer utility bills, public budgets, employment and poverty alleviation (ECLAC 2013; IEA 2014a). A virtuous cycle can be identified in productivity gains due to energy efficiency practices, where higher profits are translated into increased wages and development of newer technologies and products at lower prices to consumers, contributing in turn to poverty alleviation by raising living standards (Ganda and Ngwakwe 2014; REEEP and UNIDO 2011).

Energy can be extracted or captured directly from both renewable and non-renewable environmental sources for conversion to secondary energy, usually as electrical energy and fuel, before being transferred for final use as can be seen in Fig. 2 (Demirel 2012; Thiede 2012). As an approach to CSR, energy efficiency can be used to quantify productivity per unit of energy consumed—in other words, using less energy to deliver the same service or using the same amount of energy to deliver more service (ECLAC 2013; IRENA and C2E2 2015). Indicators of energy efficiency are used to identify consumption trends; with some exceptions, these typically use energy consumption as numerator and activity data as denominator—for instance, average heating consumption per single house by floor area when using natural gas (IEA 2014b). One such indicator is energy intensity, which measures the amount of energy used to produce a unit of output (IEA 2017).

Energy efficiency needs to be integrated with product innovation under sustainable managerial practices (Gerstlberger et al. 2014). To the extent that energy efficiency is improved, investment in energy supply is reduced (OECD 2007), and competitive advantage can be developed (Munguia et al. 2018). This is achieved mainly by implementing energy efficiency technologies and structural economic changes that drive lower energy intensity in the production and consumption of goods (IRENA and C2E2 2015). As shown in Fig. 3, different sectors exhibit different patterns of energy intensity. For instance, in the manufacturing/industry sector, this indicator decreased by 30% for the period 2000–2016. The residential sector has made the strongest energy efficiency gains, in contrast to transport sector, where the impact has been less positive—especially in the case of passenger transport, with lower vehicle occupancy rates and structural shifts between modes of transport—and freight transport, where only limited efforts have been made to improve the fuel efficiency of heavy duty vehicles (IEA 2017).

Technical and cost barriers to energy efficiency options may include lack of public acceptance, financing, information and education (OECD 2007). Two specific problems arise; first, the invisibility of energy efficiency as "not-used energy" makes it difficult to credit its positive impact value. Secondly, if private and government stakeholders fail to properly invest in supply-side opportunities for energy efficiency, these are diminished (IEA 2014a).

When technically feasible energy-efficient technologies and practices that are also cost-effective are not implemented, the phenomenon known as the "energy efficiency gap" take place, this means that

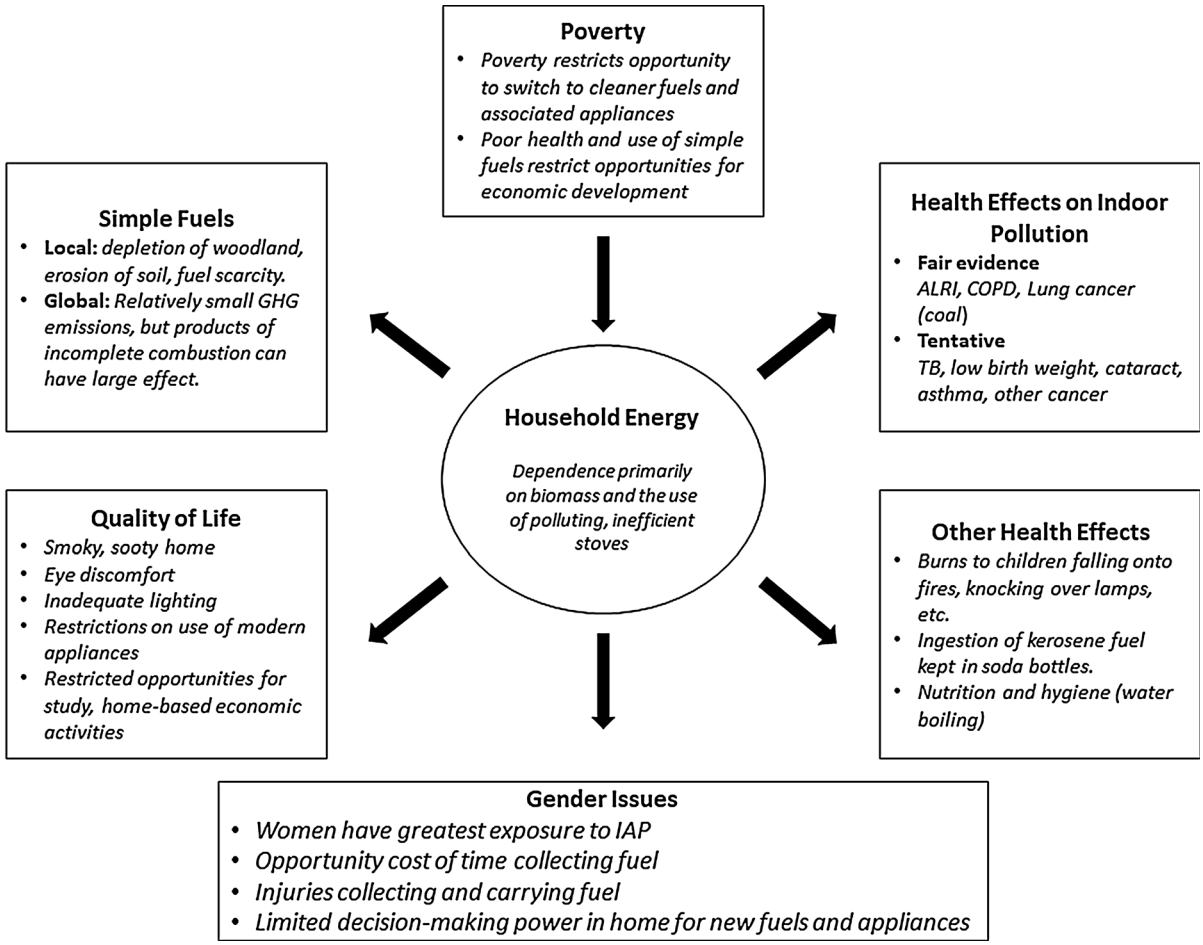

Fig. 1 Summary of health and development issues associated with the use of household energy (WHO 2002, 2018)

opportunities to improve social welfare through energy efficiency initiatives are lost (Wang and Brown 2014). For that reason, governments must develop a broad series of policy instruments that include regulations and standards, fiscal incentives and public information programs (OECD 2007).

As a guiding principle for energy efficiency, a three-tiered approach is required (see Fig. 4): reduce energy demand, improve efficiency, and use renewables where appropriate (Northern Ireland Housing Executive 2015). In this context, the United Nations Sustainable Energy for All initiative encompasses three interlinked global objectives: (1) ensuring universal access to modern energy services, (2) doubling the global rate of improvement in energy efficiency and (3) doubling the share of renewables in the global energy mix (IRENA and C2E2 2015; UN 2012).

Renewable energy and energy efficiency are important because both offer savings in primary energy demand while increasing the renewable energy share in final energy consumption (IRENA and C2E2 2015). Furthermore, both are viable substitutes for fossil fuels and have been linked to significant reductions in carbon emissions, as well as minimizing the many challenges associated with energy poverty (Ganda and Ngwakwe 2014).

While energy efficiency initiatives have a lower profile than renewable energy technologies, the latter increase awareness of energy production and consumption in both public and private sectors, stimulating energy efficiency practices alongside the implementation of renewable energy technologies (REEEP and UNIDO 2011). Initiatives involving both approaches in the period 2000–2016 have helped to eliminate more than 4 billion tons of greenhouse gas

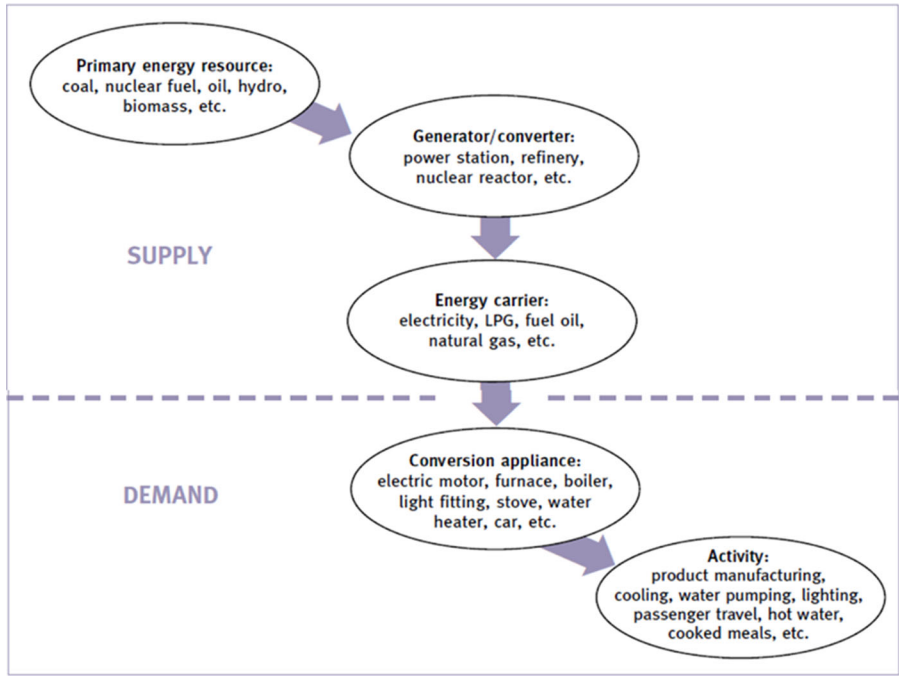

Fig. 2 The energy supply-demand chain (REEEP and UNIDO 2011)

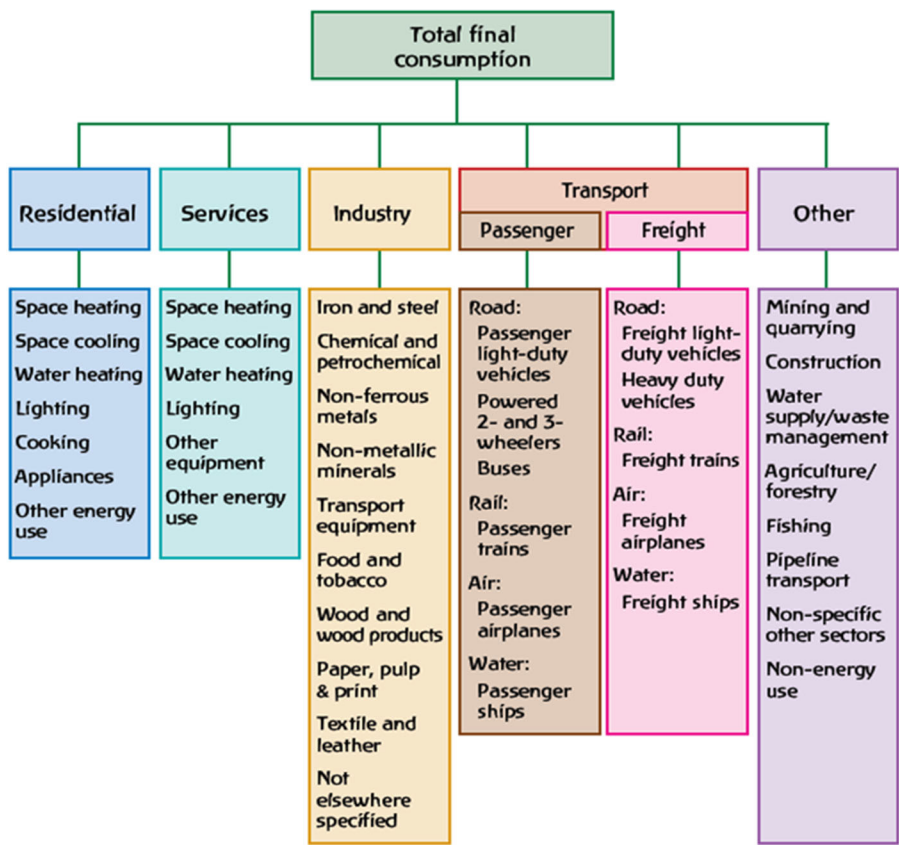

Fig. 3 Schematic disaggregation of total final consumption into sectors and sub-sectors or end uses (IEA 2014b)

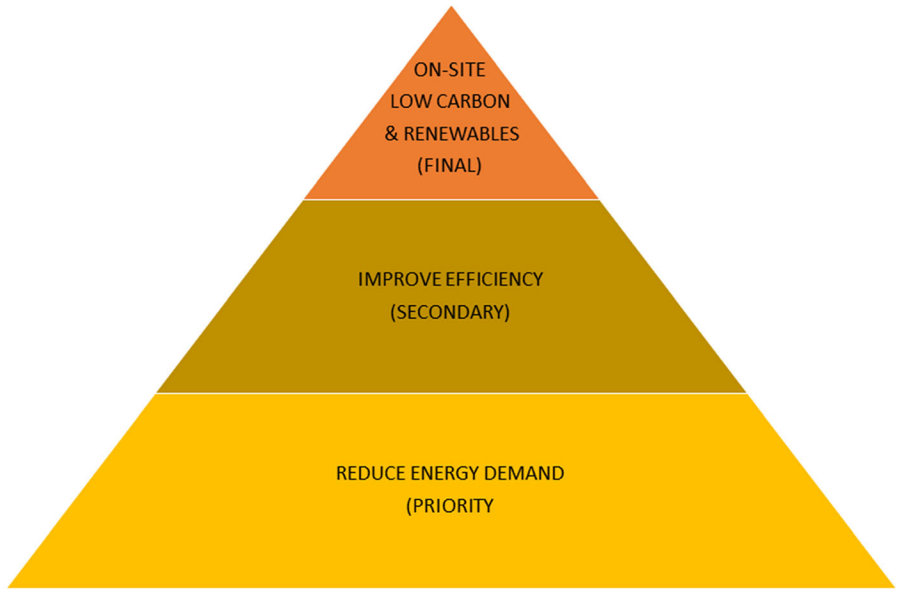

Fig. 4 Hierarchy of energy efficiency (Northern Ireland Housing Executive 2015)

(GHG) emissions as carbon dioxide equivalent (IEA 2017).

Discussion

This article argues in support of the theory that energy efficiency principles can help to operationalize CSR. Firstly, as a framework, the spectrum in which climate change-related issues are addressed by companies must be widened to the whole supply chain in order to tackle GHG emission (Kauffmann and Less 2009), because supplier-related CSR actions are needed to strengthen sustainability pathway, more especially by global sourcing firms since their social and environmental impacts could be greater (Haleem et al. 2017). Geographers also play an important role in CSR studies since, besides focusing on how "good" companies are, they follow CSR impacts also on local economic and political aspects (Hamilton 2011). Although companies may be perceived as having a greater commitment to front facing climate change issues as a part of CSR scope, according to Unsworth et al. (2016), "ordinary citizens may play in shaping the political and regulatory environment in which organizations operate."

Afterward, in a more concrete sense, both global and local companies have recently incorporated energy efficiency initiatives to reduce GHG emissions as a part of CSR's environmental sustainability projects (UNIDO 2011). Because energy efficiency can be used to strengthen CSR, it provides a tool for addressing the most frequent criticisms advanced by CSR detractors, and thus enhance the companies' reputation (Rahmawati et al. 2016). First, it responds to the social demands in the Sustainable Development Goals 2030, explicitly goal number 7, while increasing profitability and/or saving cost. Secondly, energy efficiency can be reported quantitatively in environmental and economic terms beyond narrative reports, so addressing an implied criticism of CSR initiatives. Finally, CSR initiatives that focus on energy efficiency as an effective means of countering climate change improve corporate image and reputation.

Energy efficiency initiatives put the adage *think global, act local* into practice, which is acknowledged to be one of the main challenges for corporate sustainability. Competition is tough in all markets, and economic pressures frequently eclipse CSR opportunities. Energy efficiency facilitates the creation of competitive advantage informed by the highest ethical principles, with benefits for corporations and society. Therefore, the methods selected to achieve CSR will depend on prevailing values and priorities in different countries (Rexhepi et al. 2013). One fundamental approach to this concept is environmental sustainability (Chang et al. 2017); indeed, most of the CSR literature address the environmental

dimension of sustainable development (Vildåsen et al. 2017) and is widely used by corporate managers to convey environmental responsibility (Lamarche and Rubinstein 2012). In the end, as noted by Rosen-Zvi (2011), with massive social and political attention that it receives, climate change can be considered as a core issue for CSR.

Conclusion

There is a growing literature connecting CSR with climate change, however, the role of energy efficiency in CSR is not as evident as for the Goal 7 from the Sustainable Development Goals 2030, which refers to ensuring access to affordable, reliable, sustainable and modern energy for all. Therefore, the research implications of this literature review rely in that this paper provides insights for those academics and professionals who are searching to have a deeper understanding on how to develop better strategies for climate change adaptation and/or mitigation within CSR context. Furthermore, policymakers may have a better understanding of what legislative means can be developed in order to provide companies with a framework for better reducing their GHG emissions.

Limitations of this study have to do with the authors potential bias in selecting studies and publications, however, analyses and discussions among researchers were conducted when selecting the proper available literature resources. By last, as a recommendation for future research, while moving towards 2030, progressing in fulfilling goals and targets, particularly related to linking climate change and social issues, need to be monitored by researchers, professionals, as well as policymakers, and, therefore, in order to generate and spread new knowledge and practices that can be operationalized to move society towards sustainable lifestyles.

Author's contributions All the authors contributed equally to conceiving, designing and writing the article.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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