Financial Economics Tracks

Master of Science in Corporate Finance and Banking

EXPLORING GREENWASHING ON CROWDFUNDING PLATFORMS

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Table of contents

ABSTRACT

Crowdfunding offers an alternative source of capital for sustainable ventures that are still at disadvantage when seeking funds from traditional providers. The sustainable orientation of projects has proven to be a factor of success in the performance of fundraising campaigns. However, information provided by entrepreneurs on crowdfunding platforms are based on good faith and can challenge the veracity of such orientation. So far, tools to detect greenwashing were mainly dedicated to large corporations based on extra financial metrics or to the advertising industry based on criteria calling to gut feeling. This study explores greenwashing on the world-leading crowdfunding platform Kickstarter, using a tailor-made risk scale of greenwashing for crowdfunding platforms. The backbone of the scoring grid is built on the lag between green features used in the communication and the actual environmental characteristics of the ventures focusing on objective criterions. The Greenwashing risk score is then used to measure to what extent greenwashing boosts the performance of the campaign and how it impacts the post-campaign development of the so-called sustainable ventures. Results show that greenwashing improves chance of success of a crowdfunding campaign but threaten the healthy development of ventures in the years following the call. Such results highlight the incentive for entrepreneurs to use greenwashing to collect money more efficiently, no matter whether their business model is sustainable. Consequently, greenwashing on crowdfunding platforms is likely to lead to a loss of capital at the expense of the environmental transition. This study reinforces the necessity for governments and crowdfunding platforms managers to mitigate the risk of greenwashing by developing consistent regulations to limit greenwashing incentives and to educate entrepreneurs to impact reporting, to provide readable information to backers.

Keywords: Crowdfunding; Greenwashing; Sustainability; Scams; Impact reporting; Success determinants; Post-campaign development; Extra-financial performance; Social entrepreneurship; Green words

SYNTHESIS NOTES

BACKGROUND

To face global warming, the European Commission committed to reach carbon neutrality in 2050 through the Paris Agreement (2015) with a budget of $260bn per year. Institutional investors provide significant amounts of capital to fund the environmental transition but are still limited to certain standards (provision of collateral, short-term profitability) and sectors (e.g. green bonds, socially responsible investments, …). Crowdfunding, defined as "*an alternative financing method that enables entrepreneurs to raise external financing from a large audience (the "crowd"), in which each individual provides a very small amount, instead of soliciting a small group of sophisticated investors*" (Belleflamme, 2014) offers an alternative source of capital for sustainable ventures that are still at disadvantage when seeking funds from traditional providers. So far, the academic literature about crowdfunding has focused mostly on identifying the key determinants of success of crowdfunding campaigns. It has not been until recently that some scholars explored the specificities of sustainable ventures in the successful completion of the fundraising campaign and the post-campaign development of their ventures. From such studies, the sustainable orientation of projects has proven to be a factor of success in the performance of fundraising campaigns (Calic and Mosakowski, 2016).

STATEMENT OF THE PROBLEM

Hitherto, crowdfunding offers an efficient alternative to fill the funding gap that prevent most of sustainable ventures to emerge. However, arising from the way crowdfunding platforms operate, i.e projects' description based on good faith, crowdfunding has also been at the very heart of a bunch of scams (fake crowdfunding calls, deceptive advertising, money diversion). Thus, the apparent efficiency of crowdfunding to fund sustainable businesses should be questioned considering its potential misuse. From the quick dissemination of greenwashing, defined as a *"lag in the communication of the project that give heavier important to green features than what can be found in the product or service delivered"* (Terrachoice, 2007), within the advertising area since the 1960's, one can legitimately suspect sustainable crowdfunding to make room for greenwashing. So far, tools to detect greenwashing have mainly been dedicated to large corporations based on continuous improvement of extra financial metrics and to the advertising industry based on criterions calling to gut feeling. As of today, no greenwashing tracking tools match with the specificities of crowdfunding platforms (early-stage projects, self-declared information, no legal reporting requirements, …) preventing any situational analysis of greenwashing on crowdfunding platforms to be conducted. It appears that a tailor-fitted new tool to crowdfunding platforms should be designed to explore greenwashing on crowdfunding platforms and if there ever was, take actions to prevent the slow-down of the environmental transition.

RESEARCH STUDIES

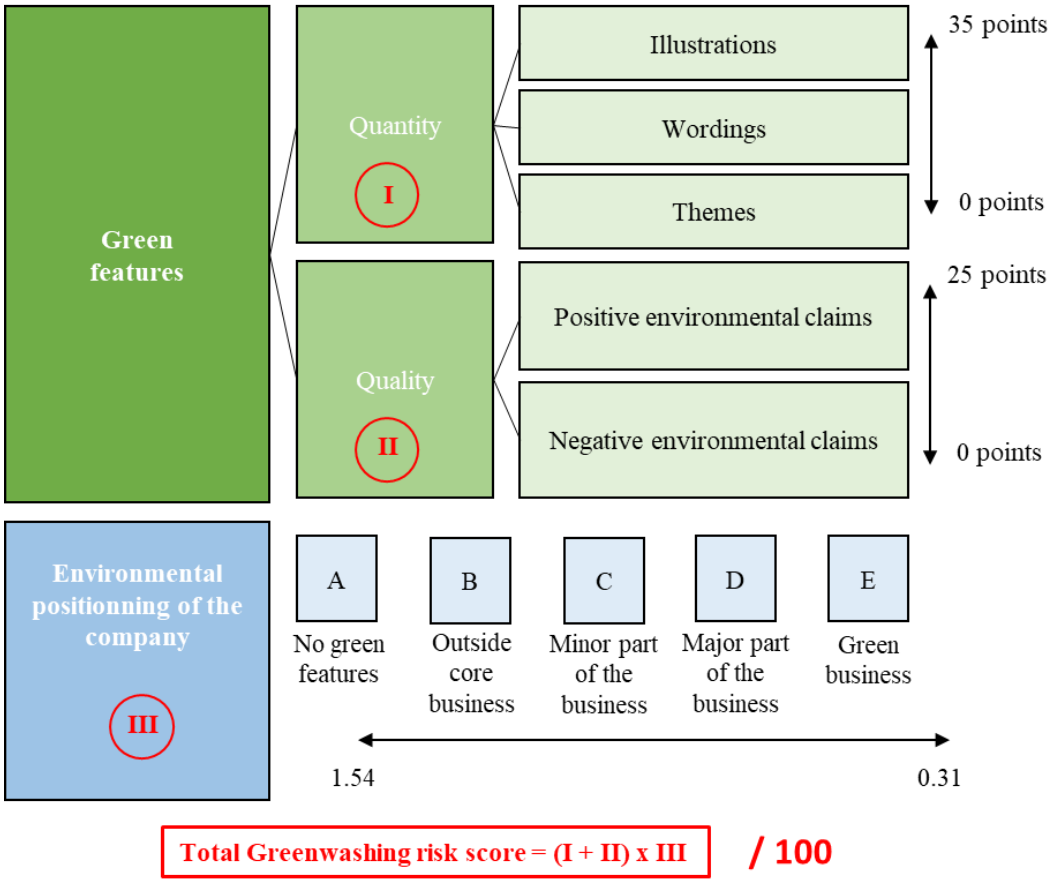
This study explores greenwashing on the world-leading crowdfunding platform Kickstarter, using a tailor-made risk scale of greenwashing for crowdfunding platforms.

The Greenwashing risk score: Methodology

This new tool has been shaped thanks to a deep merits and drawbacks analysis of the existing tools to detect both scams in the crowdfunding arena and greenwashing in the advertising industry.

The backbone of the scoring grid is built on the lag between green features used in the communication and the actual environmental characteristics of the crowdfunders projects. This study places a huge emphasis to incorporate more neutral criterions than what can be found in existing methodologies by using set theory and giving precise indications to standardize the measure of qualitative items. The scoring process is divided in three parts resulting in a risk score of greenwashing within a range of 0 (low risk of greenwashing) to 100 points (high risk of greenwashing). The guiding mechanism of the scoring grid is synthetized below (Figure 1). Please consult Appendix 7 to take note of the full greenwashing risk score model.

Figure 1: Synthesis of the Greenwashing risk score.



Source : Author's creation.

(I) The first part of the model consists in summing the points based on the quantity of green features found in the content of the project pitch. The more green features there are, the more points are summed up to the greenwashing risk score (GWS) no matter whether it is actually greenwashing.

(II) The second step adds even more points to the GWS proportionately to the lag between the quantity and quality of the environmental claims of the ventures based on the following criterions: vagueness of arguments, figured impact, impact measurement methodology, meaning accessibility.

(III) The third part of the model evaluates the environmental positioning of the company by assessing what percentage of the value chain is designed to be sustainable. The resulting coefficient is at the very heart of the system because it distinguishes a company using lots of green features legitimately from scammers.

For example, if a company is positioned as a sustainable business on its entire value chain, the high number of points due to significant green features in the pitch is largely reduced by the coefficient (E). Similarly, a company with no green features but that does not communicate either has a so little amount of points after step I and II that the high coefficient due to its "A" environmental positioning does not impact blatantly the total scoring. This system gives meaning to the quantity and quality of green features used.

The Greenwashing risk score: Application.

Through this study, the GWS is then used to measure to what extent greenwashing boosts the performance of the campaign and how it impacts the post-campaign development of the so-called sustainable ventures. The GWS was run over a sample composed of 219 self-declared sustainable projects in the Technology category of Kickstarter dating from 05/2016 to 05/2019 to avoid any COVID bias. Self-declared sustainable projects were extracted from the crowdfunding platform's based on green words filtering (See Appendix 8).

Results show that an entrepreneur with a high risk of greenwashing is more likely to be overfunded. Because the coefficient is not statistically significant at a 10% level, such results cannot provide firm conclusions but enlightening insights that are consistent with common sense. Indeed, if greenwashing were not boosting crowd campaigns performance, no entrepreneurs would use it unless they were unaware of a subtle negative impact. Going more deeply, entrepreneurs targeting general public are more likely to use greenwashing than those targeting technology aficionados. This can be explained by the increasing pressure from consumers and investors to purchase green products and services.

Besides, results give a valuable insight that the higher the greenwashing risk indicator, the less likely a project is to survive in the subsequent years. Greenwashing may be a powerful marketing tool, but corporate communications based on lies can reveal a lack of competitive advantage. Moreover, people discovering the scam during or after the fundraising campaign can alert other potential consumers and threaten the brand image on the long run. The use of greenwashing can prevent backers from reiterating their purchase due to the signs of poor morality that such behaviors generate while values were their first investment selection criteria in sustainable ventures (Lehner, 2013). Still, 98% of the ventures of the sample are still ongoing 1 to 4 years after the call, thus this is not a showstopper.

CONCLUSION

This study designs a tailored methodology to detect greenwashing on crowdfunding platforms and analyze its impact on the current and future performance of the self-declared sustainable ventures. Results highlight the incentive for entrepreneurs to use greenwashing to collect money more efficiently, no matter whether their business model is sustainable, threatening general public in particular.

This study also meets limits that could be circumvent in future research. The size of the sample must be increased to provide significant results and confirm the insights of this study thanks to automated data extraction software. Besides, the model should be run over samples from different sectors and product categories to determinate where greenwashing is the more threatening. The screening of projects through our sample also reveals a lack of impact reporting best practices shared across the industry. As a result, some truly sustainable entrepreneurs could be accused of using greenwashing wrongly only because they do not know how to report it. Considering this, our tool can be enhanced by substituting the environmental claims quality criterions as long as no reporting methodologies are widely spread across the industry.

This study provides few recommendations to mitigate the risk of greenwashing in crowd platforms. First, governments should take responsibility to prevent individuals from greenwashing by developing impact reporting methodologies tailored to early stage ventures and create a legal framework around greenwashing. Second, platforms managers should educate entrepreneurs to impact reporting and make sure to provide readable information to backers about the environmental impact of the projects. This can be done by introducing an algorithm like the GWS on Kickstarter giving a public risk score of greenwashing to each project in order to incentivize entrepreneurs to fairly report their impact and investors to challenge environmental claims found in project descriptions.

INTRODUCTION

Global warming is now becoming a reality and has major impact on the environment and society: increase of natural disasters, changes in composition of flora and fauna, pandemics… and so on. In response to the environmental crisis, more than 150 countries committed to reach carbon neutrality in 2050 through the Paris Agreement (2015). The European Commission budgeted a need of $260bn per year to reach this goal. Institutional investors provide significant amounts of capital to fund the environmental transition but are still limited to certain standards and sectors (e.g. green bonds, socially responsible investments (SRI), renewable energies Special Purpose Vehicles (SPV), …). While social entrepreneurship activities continue to grow in importance and number (Zahra and Wright, 2015) most of impact investing projects struggle finding funds because they cannot comply with the requirements of traditional funding channels: profitability on the short-run and guarantee claims (Cieply and al., 2016).

Alternative finance, i.e. financial channels that have developed outside traditional ones, are then interesting channels that needed to be investigated by the academic literature and crowdfunding is part of it. Crowdfunding is commonly defined as an alternative financing method that enables entrepreneurs to "raise external financing from a large audience (the "crowd"), in which each individual provides a very small amount, instead of soliciting a small group of sophisticated investors" (Belleflamme, 2014). That alternative funding method is gaining increasingly more power over the years: fundraising from individuals have been multiplied by a factor of seven since 2013, from €36 million to €406 million in 2018 ("2018 French crowdfunding barometer", 2019). Crowdfunding platforms are well indicated for sustainable entrepreneurship since they enable many people to contribute to projects complying with their values with no or few intermediaries. Backers on such platforms are more eager to invest in small, local projects with specifics needs and few guarantees when institutional investors would not even look at it. However, as recurrent scams occurring on crowdfunding platforms reveal, this promising funding channel has its own limitations. Crowdfunding enable everybody including non-sophisticated investors to send money to the so-called "sustainable entrepreneurs", who share information about their project based on good faith with no way to double-check the accuracy of the information delivered. This significant asymmetry of information generates a high potential for scams on crowdfunding platforms.

While the academic literature shows that impact investing can be a factor of success on crowdfunding platforms (Calic and Mosakowski, 2016), and greenwashing is spreading in the advertising arena, the increasing use of green features (such as products placements within nature, green semantic …) in crowdfunding pitches can legitimately give rise to the intuition that crowdfunding platforms are affected by greenwashing. Greenwashing can be defined as a lag in the communication of the project that give

heavier important to green features than what can be found in the product or service delivered. Some entrepreneurs could use greenwashing to boost the performance of their campaign by using a misleading communication that attributes mistakenly some environmental features to their product. As a result, there would be a reputational risk for the crowdfunding sector that can lead to a loss in funding resources for the ecological transition. Moreover, resources could be diverted from apparently eco-friendly projects to heavy carbon footprints projects, limiting the development of sustainable corporations. Such scams could in fine limit the funding of the environmental transition and discourage the deceived investors from continuing to believe in sustainability.

This study first introduces a tailor-fitted methodology to detect greenwashing on crowdfunding platforms: the Greenwashing risk score (GWS). Second, the leading reward-based crowdfunding platform Kickstarter is explored through the GWS and results are presented. Then, Greenwashing risk scores obtained are analyzed to figure out whether greenwashing boosts the performance of crowdfunding campaigns and influences the post-development of the venture. Finally, the study provides recommendations to authorities and crowdfunding platforms' owner to mitigate the risk of greenwashing on the industry and by extension the funding of the ecological transition.

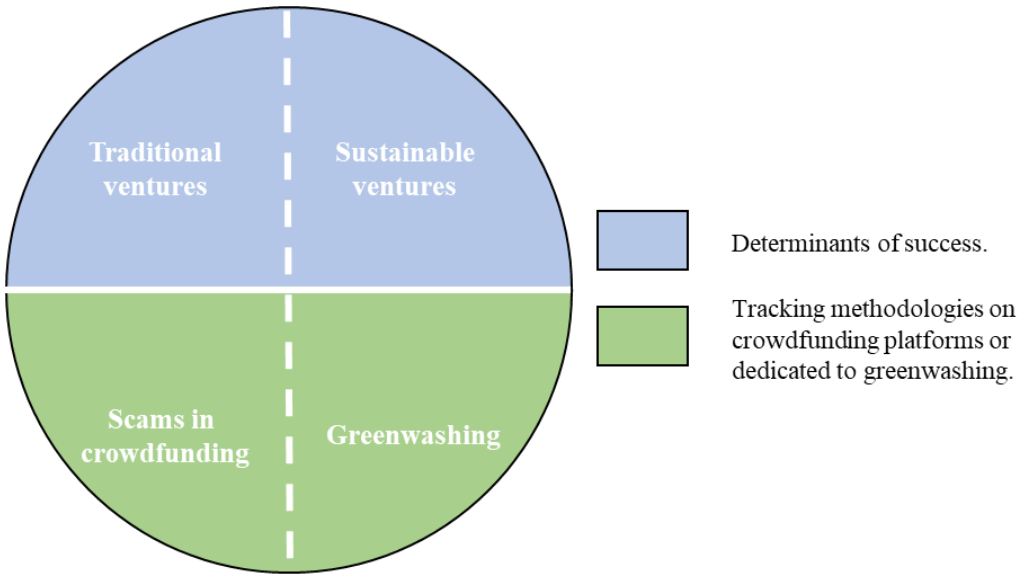
PART I: THEORETICAL PART

LITERATURE REVIEW

Crowdfunding is defined as an alternative financing method that enables entrepreneurs to "*raise external financing from a large audience in which each individual provides a very small amount, instead of soliciting a small group of sophisticated investors*" (Belleflamme, 2014). Since crowdfunding is a relatively new method of funding, the academic literature is still modest. Figure 2 below summarizes the diverse topics that had to be explored to conduct our research about greenwashing on crowdfunding platforms.

Scholars have first focused on determining the key success factors of a crowdfunding campaign based on their ability to reach the funding goal and then to survive in the subsequent years on the market. Recent literature is also challenging those drivers of performance applied on sustainable ventures. Figure 3 (at the end of the next subsection) synthetizes the funding structure of the research conducted so far on crowdfunding success and their main findings. Besides, no academics research tried to test whether environmental claims of the said "crowdfunding sustainable projects" were proportionate to the actual features of the projects, in other words, if there were greenwashing on crowdfunding platforms. This is why a literature review about both greenwashing tracking methodologies in the areas where it exists can bring precious insights to design one for crowdfunding projects. Finally, studies about scams on the crowdfunding arena also helps to figure the specificities of scammers on the crowdfunding arena and adjust our model to spot them. Figure 4 (at the end of this section) develop a situational analysis of existing academic literature about tracking methodologies and their main findings.

Figure 2: Situational analysis of the existing academic literature around greenwashing on crowdfunding platforms.



Source: Author's creation

Factors of success in crowdfunding.

Several studies show that the characteristics of the management team have an impact in the success of the crowdfunding campaign. Amongst them, the number of entrepreneurs on the Board, their management's skills, their professional or academical background and networks are important determinants of success (Alhers and al., 2015). Unlike offline fundraising, women are more successful in crowdfunding campaigns (Barasinska and Schafer, 2014; Greenberg and Mollick, 2017; Frydrych and al., 2017; Jovanovic, 2019; Bento and al., 2019). Gorbatai and Nelso (2015) suggest that women's communication style better fit crowdfunders expectations than men. The characteristics of the projects are also decisive determinants (Etter and al., 2013). Appealing to altruist values, non-profit organizations are more likely to succeed (Belleflamme and al., 2013; Chen and al., 2016). Similarly, "All-Or-Nothing" campaigns are also more likely to succeed since it signals commitment from the entrepreneur who takes a greater share of risks by accepting to give back all the money if he does not reach the goal (Cumming and al., 2014). Rewards also matters, would it be financial rewards (Ordanini and al., 2011) or non-financial rewards (Gerber and al., 2012). Especially, Hu and al. (2015) show that because reward-based crowdfunding targets to heterogenic investors, the product mix strategy is a decisive factor of success. The type of rewards can produce opposite outcomes on crowdfunding success. The funding goal reduces the chance of success in reward-based crowdfunding (e.g. Mollick, 2014; Kuppuswamy and Bayus, 2017) whereas it boosts the likelihood of crowd-equity success (Lukkarinen and al., 2016). The sector in which the product or service is positioned can also matters irrespective of the nature of its rewards. In general, the campaign duration is negatively correlated with the rate of success in both rewards and equity crowdfunding (Frydrych and al., 2014; Mollick, 2014; Lukkarinen and al., 2016). Yet, technological projects attract more investments when their duration are longer in Reward-based crowdfunding (Cordova and al., 2015). Amongst success factors frequently cited in crowdfunding literature are those giving signals to investors of a qualitative project's description by the management team (Hui et al., 2012; Mollick and Kuppuswamy, 2014; Bi and al., 2017). Visualization's items (Koch and Siering, 2015) like video pitch (Frydrych and al., 2014; Bi and al., 2017), Word counts (Bi and al., 2017) are good examples. Especially, Mitra and Gilbert (2014) show that semantics has a significant predictive power (58%) on the success of one's campaign. Through the analysis of a microlending platform, Allison and al. (2015) specify that entrepreneurs telling a business story are attracting less people than those telling a socially oriented story. On the contrary, spelling errors in the description of the campaign participate in the failure of projects (Mollick, 2014). The promotional activities undertaken by entrepreneurs to boost their campaign also matters (Kuppuswamy and Bayus, 2017). Combined with project's characteristics, social features give a higher predictive power about the likelihood of success of one campaign (Etter and al., 2013). The number of connections of the founders on social networks is often used to test the impact of the entrepreneur's network on the success of its campaign (Giudici and

al., 2013; Kang and al., 2017; Lukkarinen and al., 2016; Vismara, 2016): Facebook friends (Mollick and Kuppuswamy, 2014) or social network coverage (Qiu, 2013) are often used as proxy. Few scholars looked further in the potential investors' characteristics relatively to the success of the campaign. The distance between founders and funders has proved to be determinant in the success of one campaign (Agrawal and al., 2011, 2015; Mollick, 2014) due at least in part to a shared culture (Burtch et al., 2013). Lin and al. (2014) put the heterogeneity of crowdfunders forth and propose to sort in 4 standard-profile based on their motivations and strategies through crowdfunding investments: The Active Backers, The Trend followers, The Altruistic and The Crowd.

Papers about the determinants of post-campaign success are still rare. On the reward-based side of crowdfunding, Mollick and al. (2014) show that over 90% of successful projects are still ongoing one to four years later. He further explains that one of the main determinants of the venture's development is the ratio goal by size of the project: the smaller the project, the smaller should be the minimum amount of money asked for. An entrepreneur setting up a goal threshold that is consistent with the scope of its business will show signals of good planner. Team quality, social capital of the entrepreneur (estimated through the Facebook friends proxy) and outside endorsement also matters (Mollick and Kuppuswamy, 2014). Deadline compliance is a key determinants of a successful post-campaign development (Xu and al., 2016) reinforcing the trust of investors toward the project and on the longer run, the business. Last but not least, according to surveys, crowdfunding allows entrepreneurs not only to raise funds but also to facilitate access to suppliers, customers, press ... (Mollick, 2014) fostering the post-campaign success.

Factors of success in sustainable crowdfunding.

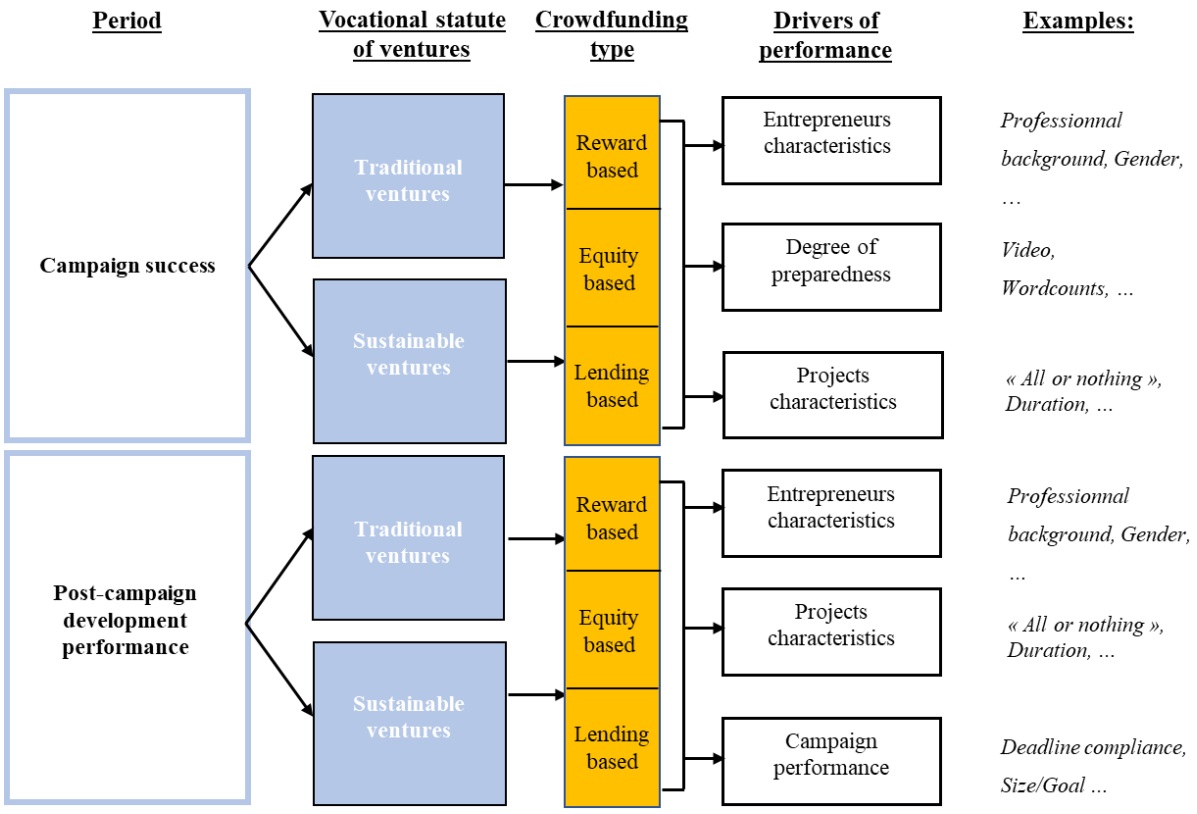
Crowdfunding is a promising channel of funding for sustainable entrepreneurs that struggles to collect funds from traditional channels (Fedele and Miniaci, 2010; O'Rourke, 2010). Crowdfunding seems to best match their needs and constraints (Drury and Stott, 2011; Rubinton, 2011; Belleflamme and al., 2014; Cieply and al., 2016). Sustainable entrepreneurship often bears significant risks but crowdfunders are mainly interested in the values carried by the projects and not by their financial metrics (Lehner, 2013), making crowdfunding an adequate funding channel. Becoming a powerful tool for sustainable entrepreneurs, crowdfunding has recently been investigated through the scope of sustainable entrepreneurship. Above all, there has been a growing debate about whether the sustainable orientation of one project a determinant of success is in itself. On one side, Calic and Mosakowski (2016) affirm that projects with social or environmental orientation are more likely to reach their goal and to raise capital from other sources than crowdfunding. On the other side, Horisch (2015) and Ahlers and al. (2015) indicate that the sustainable orientation of one project does not influence the outcome of the fundraising: it would make economically little sense for investors to foster sustainable projects since

they would be the only one to pay for services and products benefiting to everyone. More than the environmental orientation of one project, the quality of the pitch is what would be really at stake in the success of sustainable crowdfunding as well (Mollick, 2014; Horisch, 2015). More litterature on this in the coming year should be undertaken to better understand the root causes of that controversy. Scholars are still trying to determine which drivers of traditional crowdfunding success are also legitimate for sustainable ones. First, the values carried by each project like altruism (Burtch and al., 2013), or the donation of part of the project's proceeds to a non-profit organization (Bento and al., 2019) are decisive factors. When selecting in which project to invest, sustainable crowdfunders are more likely to contribute in projects that carried values they cherish (Hemer, 2011; Ibrahim, 2012; Bartenberger and Leitner, 2013). Second, the quality signals sent by sustainable entrepreneurs through their communication style is of great importance. Communication allows them to present their project under the scope of a business or an altruistic opportunity. Allison (2015) shows that the latter has more impact on crowdfunders than the first in the microlending arena. Making potential backers feel the core social values of the project and a connection through the linguistic style leads to a more efficient fundraising campaign (Parhankangas and Renko, 2017). Analyzing clean-tech projects, Alhers and al. (2015) state that the impact of communication is even more important in sustainable crowdfunding than for standard entrepreneurs since they have to justify the higher risk borne by online investors and solve the asymmetry of information. Thus, sustainable entrepreneurs need longer project descriptions and more illustrations than others. Like traditional crowdfunding, the composition of the team matters in sustainability: women funders are more likely to succeed than men (Parhankangas and Renko, 2017; Bento, 2019). The social capital of the management team is correlated with the success of the project (Lehner and Nicholls, 2014; Saxton and Wang, 2014). Alongside success factors coming from the previous academic literature on standard crowdfunding, new drivers have been tested on sustainable projects. Unlike standard crowdfunding, an extended funding period grants a better rate of success in sustainable crowdfunding (Burtch and al., 2013) and "All or Nothing" donations are less likely to succeed than those where the entrepreneur keeps the capital raised whatever happened (Wash and Salomon, 2014). The opportunity to benefit from a tax relief in investing in one sustainable project also boost the performance of the call (Lehner and Nicholls, 2014).

The post-campaign development of sustainable ventures has uniquely been investigated by Bento and al. (2019) on Kickstarter. Through the analysis of hundreds of projects that were said socially or environmentally oriented, Bento and al. (2019) put the shed on the following drivers of the post-campaign performance. First, sustainable entrepreneurs lacking from a long-term vision are more likely to fail in the years following the fundraising. Second, the bigger the pledge amount, the higher the survival rate of sustainable ventures. Yet, the founder is less likely to run a healthy venture if the goal

and rewards are not planned in light of the potential future number of backers involved. A disproportionate number of backers gives way to delays in delivery and thus hurts the brand image on the long run. Besides, sustainable ventures that commit through their pitch to donate part of their proceeds to charities are less likely to survive than others. The marketing effect of donation is efficient to attract investors but not sustainable in most of the case (failure of the venture in the coming years because of unbalanced expenses). Most of the determinants of success in sustainable projects are closely linked to their communication style and values endorsed before even the quality of their business plan. On the one hand, information disclosed by entrepreneurs on crowdfunding platforms are based on good faith with no way for web users to properly check them. On the other hand, the communication style is one of the main determinants of success in such campaigns enabling the sharing of the core values of the business. Even more, the simple sustainable orientation of a crowdfunding campaign is likely to boost the performance of the campaign itself. So far, studies made about sustainable crowdfunding have selected their data thanks to filtering word (e.g. "*social entrepreneur"/" eco-friendly*", Bento and al., 2019) or hindsight from several assessors (Calic and al., 2016). However, to date, no study tried to check the veracity of the environmental claims even though the sustainable statutes of their study were based on it, leading to a risk of biased reports.

Figure 3: Situational analysis of existing academic literature around determinants of success on crowdfunding platforms.



Source: Author's creation

Figure 3 above synthetizes the funding structure of the research conducted so far about crowdfunding success and their main findings. Research is first divided between periods: current period (i.e drivers of the current fundraising campaign) and future period (i.e drivers of the performance of the campaign in the subsequent years after the call). Each period has been investigating ventures with a sustainable orientation independently from the more standard ones. Crowdfunding is then divided in 3 kinds: Reward-based crowdfunding (individuals invest money in return for some kind of non-financial rewards. E.g: Kickstarter), Equity-based crowdfunding (individuals invest money in return for shares in the venture), Lending-based crowdfunding (individuals invest money in return for bonds in the venture). Finally, searchers have spotted diverse drivers of performance between each axis of research and group them into categories as presented in the last columns.

Determinants of greenwashing.

No academics research tried to test whether environmental claims of the said "sustainable projects" were proportionate to the actual features of the projects, in other words, if there were greenwashing on crowdfunding platforms.

Scams in crowdfunding.

Yet, information obtained based on studies about scams in the crowdfunding arena can bring useful information to explore greenwashing. Crowdfunding is a breeding ground for scams since there is a significant asymmetry of information between the entrepreneur that has more knowledge about the project than investors (Backes-Gellner and Wernet, 2017; Michael, 2009) especially since crowdfunding includes a huge number of non-sophisticated investors that are a priori not able to mitigate this asymmetry of information (James, 2013). The determinants of scams in crowdfunding have been studied by a modest academic literature: Wafa and al. (2016) argue that frauders make less typographical errors and use less words. Additionally, their linguistic style is more formal. Cumming and al. (2016) reveal that scammers are much more secretive: most of them have never run a campaign before (or at least under the same pseudo), are not covered by social media, and produce a blurred description pitch with a higher number of rewards. Shafqat and al. (2019) run a study comparing the comments left by backers on campaign pages on Kickstarter and find evidences that themes addressed in non-scams campaigns differ from those addressed in scams ones, proving that comments have a predictive power in detecting scam on crowdfunding platforms.

Greenwashing in the advertising industry.

In addition, the literature about greenwashing in the advertising arena should already point to some relevant determinants. Natural elements in advertising can falsely make consumers believe that products and services endorse environmental features (Russel and al., 2015). At product-level, one determinant of greenwashing is the vagueness of terms used to sustain environmental claims and even fake

arguments (Furlow, 2010). Through the *10 signs of greenwashing* Gillepsie (2008) states that "suggestive pictures" including the use of green colors can mislead consumers (see Theoretical Framework). Colors are of importance since about 62% to 90% of the purchasing decision is based on colors alone (Singh, 2006). While eco-labels intend to mitigate the risk of greenwashing by providing third-party certifications, some eco-label are tailored to match the needs of the underlying corporation. Unfortunately, fake eco-labels are proven to efficiently fool consumers (Zaman and al., 2010).

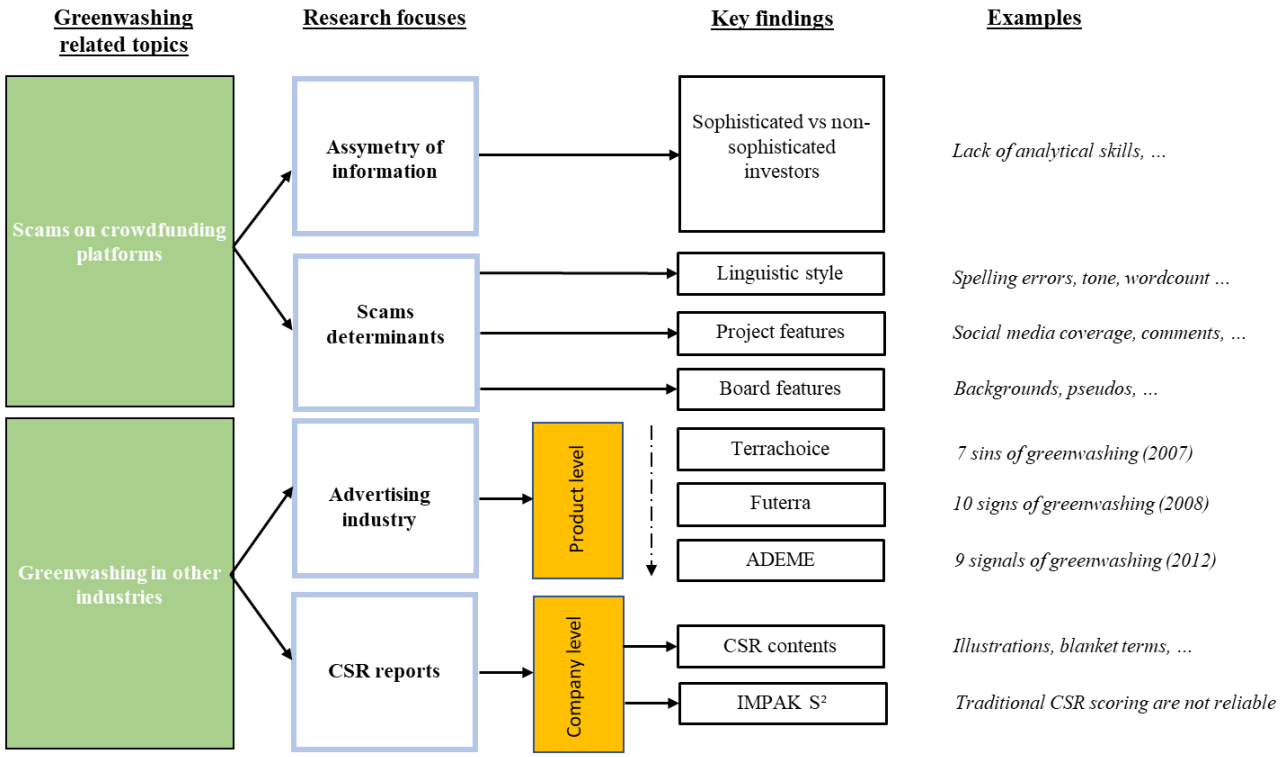
All kind of organizations have been developing tools to detect greenwashing in advertising. Most of them base their analysis on criterions that appeal to the gut-feeling of the consumer seeing the ad. Criterions focused on the disproportion between a green feature and the actual characteristics of the product. For example, the *7 sins of greenwashing* designed by the environmental consultancy agency Terrachoice (2007) provides 7 criterions to detect greenwashing at product-level, ranging from vague language to a blatant lie. Futerra agency (2008), has complemented this model by adding 3 signs based on the same motto: highlighting disproportion between communication and reality. Details about the two methodologies previously cited are available in Theoretical Framework section. The obvious limit of both methodologies is their intent to mitigate the asymmetry of information by asking specific questions about the product without giving more information to the assessor and thus no other way to answer to those questions than insights. As a result, the feeling of greenwashing results from the knowledge of the assessor which can be very limited depending on the industry. Such logic works for blatant greenwashing but not for more subtle one where more information is needed to spot a gap.

Some scholars stepped back from the consequences and determinants of greenwashing to understand the causes of greenwashing. The regulatory framework is one indirect but significant driver of greenwashing. Poor regulation and absence of international convention on greenwashing give way to uncertainty and unreliability towards environmental claims produced by corporations (Delmas and al., 2011). The lack of regulation is partly due to the complexity to quantify and qualify greenwashing: if researches have been conducted at the product-level, it was not the case at the firm-level. Delmas and al. (2011) put the shed on the following drivers of greenwashing (sorted by stakeholder) that could be mitigated thanks to a better regulation framework: at the organizational-level (corporate inertia, lack of internal communications, …), at the external-market level (pressure from consumers, investors and competitors requiring green products and sustainable firms) and at the individual-level (narrow choices decisions by managers that consider short term positive outcomes without balancing with the risk to mislead stakeholders on the long term).

Greenwashing in Corporate Social Responsibility reports.

The determinants of greenwashing through the analysis of Corporate Social Responsibility (CSR) reports are interesting proxy for greenwashing on crowdfunding. Thomas (2014) put the importance of illustrations forth in such sustainable reports giving rise to mislead ideas about the actual environmental practices of the corporations. Roberts and Koeplin (2007) introduce a methodology to detect greenwashing in sustainability reports of two Portuguese firms based on the comparison between the quantity of environmental claims in the report relatively to the quality of such claims. Finance Impak, a Canadian start-up dedicated to score the sustainability of corporations also provide their own methodology ("Impak IS²", see Theoretical Framework). To advocate for better impact measurement through CSR reports, and expose the limits of CSR/ESG scoring, they published an open-source analysis of the CSR report of Unilever, considered as one of the most sustainable corporation in the CSR arena (Bernier-Monzon and al., 2020). Their result show that the sustainable score of Unilever produced by the Impak IS² is very low *(*245/1000, where 1000 is granted to a perfectly sustainable corporation*)* compared to the ESG one *(*in the 95% centile of the best companies*).* This contrast is explained by the fact that Unilever focuses its communication on the positive impact initiatives while hiding the significant negative externalities they are generating. For example, only 9 brands out of 40 are impact-oriented and are disproportionately promoted through Unilever's CSR report. Impak Finance reveals that this result highlights a generalized trend shared by most of large corporations.

Figure 4: Situational analysis of existing academic literature about tracking methodologies.



Source: Author's creation

Figure 4 above develops a situational analysis of the existing academic literature about tracking methodologies and their main findings. A first major research effort has been conducted on scams occurring on crowdfunding platforms. Some scholars focus on exploring the implications of the assymetry of information in the crowdfunding arena on diverse population: sophisticated investors (i.e investors who have a high net-worth and knowledge in financial markets) and non-sophisticated investors (i.e general public). Others track the key determinants of scams in the crowdfunding arena, classifying drivers between categories with the aim to prevent scammers to act by spotting them upwind. A second panel of research has been exploring criterions and methodologies to track greenwashing in sensitive industries. Most of methodologies has been developed in the advertising industries at the product level. Recent literature is also exploring greenwashing inside CSR reports, thus at a company level. Examples of findings in each research strand are introduced in the last column.

Macroeconomic consequences of greenwashing.

Vismara (2017) reports that a sustainability orientation not only attracts more non-sophisticated (i.e. individuals that does not have sufficient capital, experience, and net worth to engage in more advanced types of investment opportunities) but involve them more as well. While sophisticated investors are market-centered, the community logic is equally important for non-sophisticated investors. As a result, sustainable entrepreneurship poses a threat on restricted investors that do not have the means to mitigate the asymmetry of information. Besides, Furlow (2010) bring to the forefront the potential impact of greenwashing at the macro level. Indeed, if greenwashing becomes a standard use, not only would it mislead consumers but also poses a threat to the green industry since true environmental companies would lose their competitive advantage. Besides, consumers would distrust environmental claims and thus no corporations would have incentives to create sustainable value chains. Consequently, exploring greenwashing on crowdfunding platforms through a tailor-fitted methodology is a powerful contribution to the crowdfunding arena and beyond.

Overview of the literature review implications for our research on greenwashing on crowdfunding platforms.

The analysis of the existing tools and methodologies to detect greenwashing or scams in diverse industries help us to design a tailor-fitted methodology to detect greenwashing especially on crowdfunding platforms. Table 1 below synthetizes the key strengths and weaknesses of the existing tracking methodologies highlighted by the previous litterature that are reused or bypassed in our tailor-made greenwashing tracking tool.

Table 1: Synthesis table of the main strengths and weaknesses of the existing tracking methodologies.

Advertising methodologies:

- **Items to keep:**

- Disproportion between actual features of the product and promotion.

(Terrachoice, 2007; Futerra, 2008; ADEME, 2012; Bernier-Monzon and al., 2020).

- Summing points system.

(Terrachoice, 2007; Futerra, 2008; ADEME, 2012; Bernier-Monzon and al., 2020).

- Greenwashing risk indicators (examples) :

Natural elements (Russel and al., 2015)

Colors (Singh, 2006)

Wording attributed to eco-friendliness (Sun and al. 2019; Na, Y-J. 2011)

Sins of No proof (Futerra, 2008)

…

- **Items to challenge:**

- Tautology bias (Terrachoice, 2007; Futerra, 2008; ADEME, 2012)
- Gut-feeling based (Terrachoice, 2007; Futerra, 2008; ADEME, 2012)
- Product level (Terrachoice, 2007; Futerra, 2008; ADEME, 2012)

CSR and scams methodologies:

- **Items to keep:**

- Quantity vs quality of environmental claims (Roberts and Koeplin, 2007)
- Greenwashing indicators (examples):

Illustrations (Thomas, 2014; Terrachoice, 2007; …)

Hidden negative externalities they are generating (Bernier-Monzon and al., 2020).

- Classification thanks to environmental positioning (Bernier-Monzon and al., 2020)
- Wordcounts (Shafqat and al., 2016)

- **Items to challenge:**

- Analysis of a company through CSR reports

(Petersson and Dzafic, 2016; Bernier-Monzon and al., 2020)

- Long term needed to assess progress

(Petersson and Dzafic, 2016; Bernier-Monzon and al., 2020; ISO26000)

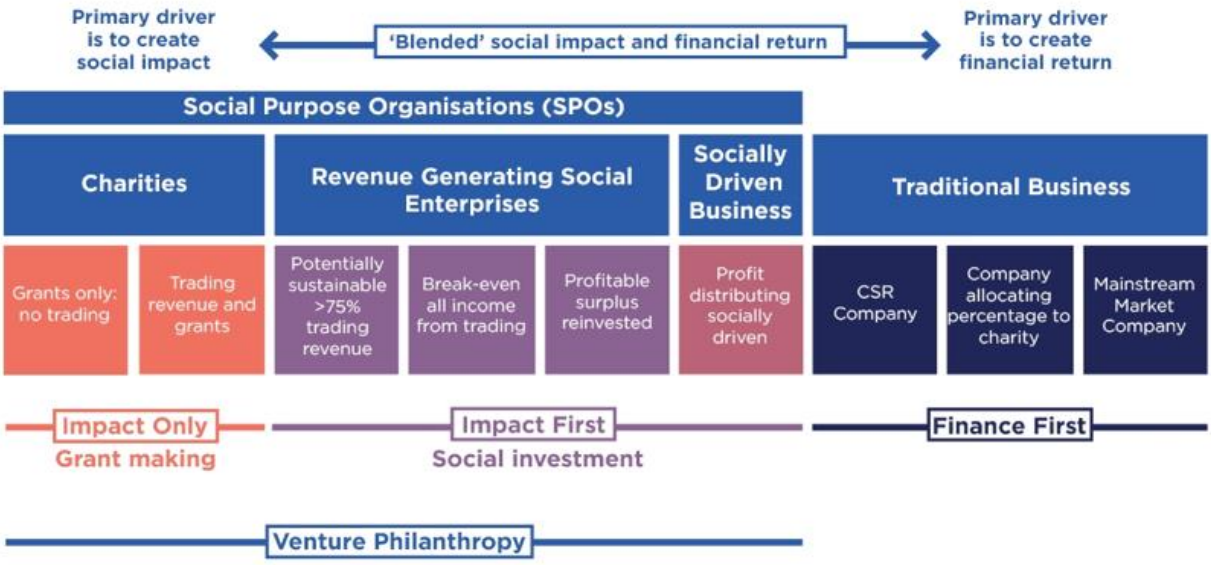
Source: Author's creation

THEORETICAL FRAMEWORK

Sustainable ventures.

Impact investing involves multiple forms of organizations. The European Venture Philanthropy Association (EVPA) classified and positioned them based on their main driver on an axis between social impact and financial return (see Figure 5). Sustainable ventures raising funds on non-specialist platforms (e.g. Kickstarter) can position themselves in all the categories but are more likely to withstand in *Traditional Business* since they are early-stage and thus are seeking to reach their break-even point more than building a full sustainable business without profitability. Yet, such ventures can plan to integrate Social Purposes Organizations (SPOs) on the longer run. In our study, charities would be excluded since one of the objectives is to assess the impact of greenwashing on post-campaign development.

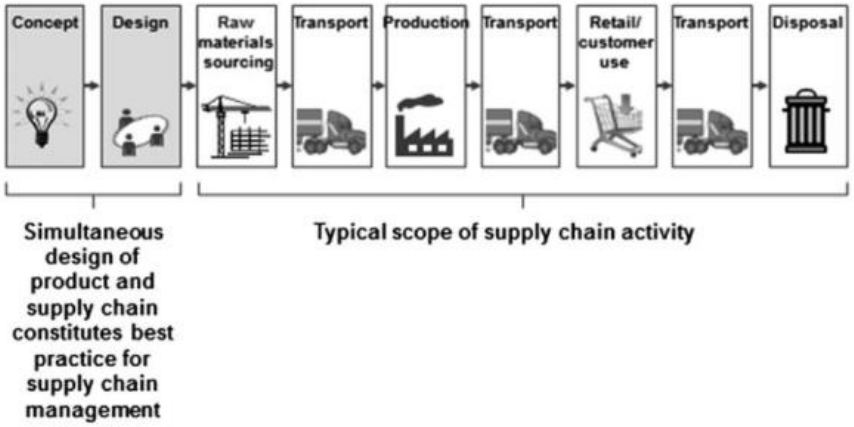
Figure 5: The impact investing spectrum.



Source: The EVPA.

From the value-chain perspective, the definition of sustainable ventures has evolved quite a lot. Today to be a sustainable business, not only products or services need to be sustainable but the entire value chain. The *green SCOR* was developed by Wilkerson and al. (2003) to offer a fresh conception of the supply chain with a sustainable orientation (see Figure 6 below). Their work is based on the SCOR model, a process reference model for supply chain management developed by the Supply Chain Council (SCC). It states that a product (or service) should be designed considering its future supply chain: this way, production processes from development to disposal can be optimized to limit the negative externalities of along the product life cycle.

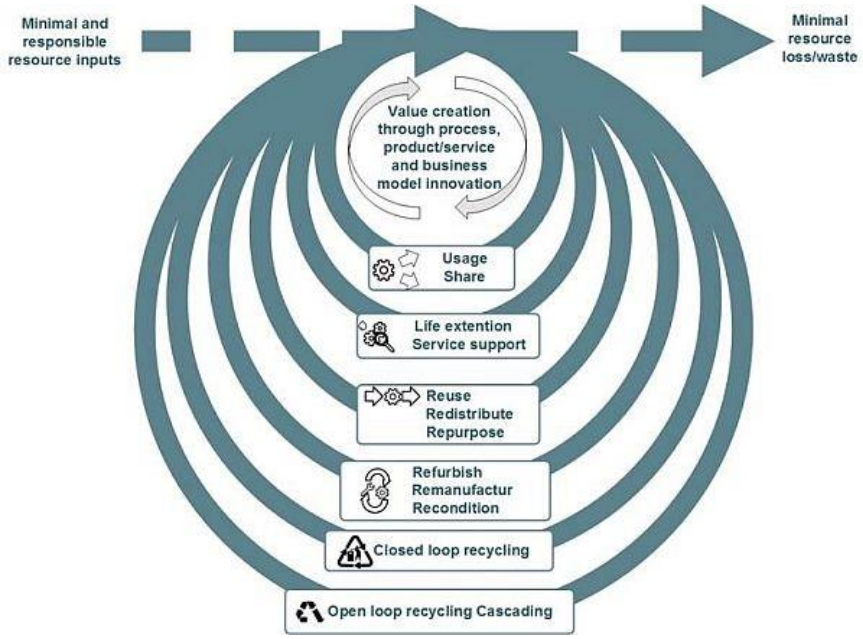
Figure 6: The product life cycle forms the basis of "green" supply chain management.



Source: Cetinkaya and al., Sustainable supply chain management: practical ideas for moving towards best practice, 2011.

Especially, architect William McDonough and chemist Michael Braungart (Cradle to Cradle, 2008) introduced the concept of *Circular economy*. Circular economy considers the product from another perspective: a future waste. Reverting the life cycle of the product enable corporations to design a product with minimal environmental footprint. Figure 7 shows how ventures can minimize the footprint of their production by optimizing the life cycle of their product. Each product life phase can be improved to increase the duration of the product and consequently, reduce the environmental footprint. For example, a product can be made from re-used raw materials, shared between multiple people, repaired, or repurposed instead of substituted, etc. ….

Figure 7: Value creation through circular economy.



Source: SIRRIS.be, *Why we should consider embracing the circular economy.*

Impact reporting methodologies.

Since the impact of a company on its environment is hard to quantify; there is no consensus about the best way to measure their impact. Therefore, lots of nonprofit organizations, corporations (e.g. "A new tool to report products social and environmental impact", L'Oréal, 2018) and governments (e.g. "French impact, innovate to serve general interest", French Impact, Ministry of environmental transition, 2018) develop home-made methodologies. This is consistent since impact measurement goes hand in hand with the industry in which the corporation is: one cannot measure the environmental impact of an oil & gas company with the same tools than a retail shop. Ivy and al. (2016) argue that the plurality of measurement methodologies indicates that investors have different measurement objectives in different phase of the investment cycle. In this line, they developed the *Continuous cycle of measurement objectives* (see Figure 8): a framework explaining how impact investors assess the sustainable performance of their investments. First, during the due diligence, they assess the resources possessed by the venture to generate sustainable impact on the long run. Second, they plan how they will measure the impact performance (data, frequency, metrics). Third, they monitor the impact through the lifetime of the investment impact to ensure mission alignment and performance. Finally, they analyze post-investment the social impact created during the lifetime of the investment. These objectives feed into one other as described in the figure below.

Figure 8: The Continuous cycle of measurement objectives.

Source: Ivy So and Alina S. Capanyola, How Impact Investors Actually Measure Impact: A systematic look at leading impact investors' wide array of impact measurement practices—and how best to combine them, Harvard Business School, 2016.

Amongst the multiple methodologies used on the market to measure the impact performance of corporations and organizations, the most important ones are outlined hereafter (see Appendix 2 for a synthesis table of the main impact reporting tools).

Environmental, Social and Governance analysis.

Environmental, Social and Governance (ESG) analysis mirror the Corporate Social Responsibility in the investment arena. This analytical tool is one of the most widespread through large corporations though this is not mandatory. ESG analysis provides information about how a company respond to climate change, treat workforce, manage the supply chain, build fair relationships with stakeholders, and contribute to innovations. As its name suggests, ESG analysis is based on three categories; Environmental, Social and Governance (see Figure 9). The main advantage of the ESG analysis is that it is the only methodology shared by all the large corporations. Thus, it is easily accessible and readable. However, ESG analysis produces extra-financial numbers that are informative but can hardly be translated in monetary numbers. Besides, this methodology does not confront the initiatives undertaken to the size of the company, leading easily to *impactwashing* i.e. giving more weight to impact claims than what they represent. Finally, giving positive impact scoring without reference figures can mislead the reader.

Figure 9: ESG Analysis criterions.

Environmental	Emissions reductions; Resource management: air and water pollution or scarcity, biodiversity, deforestation, energy efficiency, waste management; Environmental accidents; Risk mitigation.
Social	Health and safety; Human rights: labor standards, data protection and privacy; Community Relations: customer satisfaction, gender and diversity; Supply Chain monitoring: employee engagement.
Governance	Lobbying; Executive compensation, Shareholders' Rights, Accountability of Board Leadership: board composition, audit committee structure; Vision; Political contributions; Whistleblowers schemes.

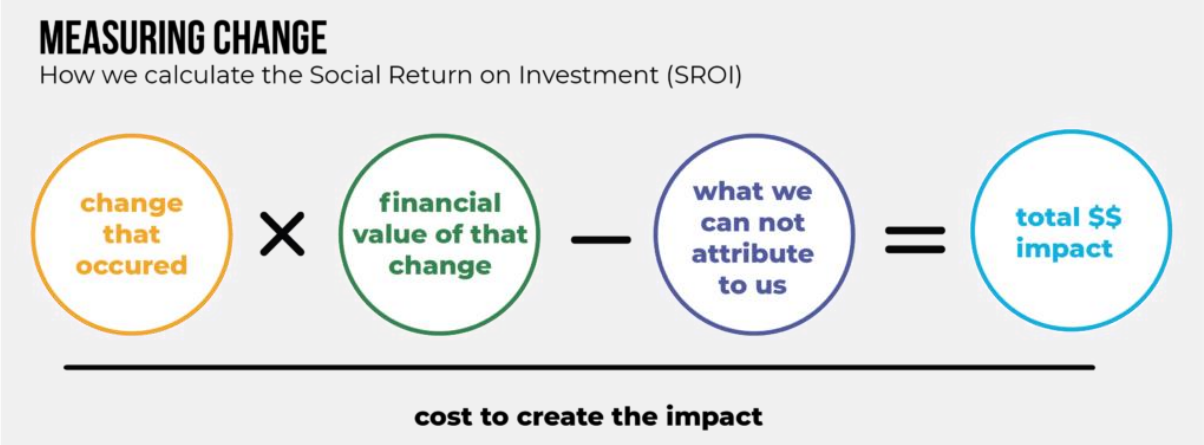
Source: Author's creation based on CFA institutes data.

Social Return On Investment.

The *Social Return On Investment* (SROI) is derived from a commonly used financial ratio: the *Return on Investment* (ROI), a commonly used financial ratio. The SROI enables a corporation to compare the

positive impact (i.e. social, societal, and environmental impact) generated by the company to the cost of inputs (in time, nature or money) necessary to reach the targets (see Figure 10). The positive impact that is not attributable to the company is eliminated from the value created (something that would have happen in any case or thanks to another stakeholder). This method is mainly used by those having a project (either corporation or organization) and willing to measure their social impact. (e.g. entrepreneurs, investors). The main advantage is that SROI is a framework based on social generally accepted accounting principles (SGAAP) close to traditional financial measurement and thus ease the comparison. Nonetheless, it is not applicable to interventions without quantifiable benefits.

Figure 10: Social Return On Investment (SROI) methodology.



Source: DCCentralKitchen (2019)

Theory of change.

According to the United Nations sustainable Development Group's (UNDG) definition, *Theory of change* is a method that explains how a given intervention, is expected to lead to a defined development change. Theory of change starts by defining the long-term goal and then works back from this to identify with which resources and strategy can the venture or organization reach those goals (see an example in Appendix 1). It is a useful tool to plan a long-term strategy but does not measure the impact created, only the impact targeted.

Mission Alignment.

Mission alignment method is efficient in measuring the long-term strategy against the mission of an organization. The model uses criterions based on values against which impact investors rate all investees over time by conducting informal surveys, often incorporating beneficiary feedback and a scorecard that monitors Key Performance Indicators (KPIs) for each investment. Commonly used KPI in Mission Alignment model are summarized on the figure 11 hereafter. *Learning and Growth* defines how human,

technology and organizational culture move together to create synergies. *Business Processes* describes to what extent the outputs match customer needs. *Customer perspective* gives information about customer related metrics (customers acquisition, retention, profitability, …). Finally, *Financial ratios* are used to assess the profitability of the company including social ratios (e.g. the SROI described above is one of them). The main advantage of this methodology is to detect gap between the end goal promoted against the real impact created by a company. However, it can only be applied on firms of a certain age that have data to compute KPIs and stakeholders to interview.

Figure 11: Balanced Scorecard methodology.

Source: Authors' creation.

Experimental and quasi experimental methods.

Experimental methods assess what would happen if no interventions were run to better assess the benefits of interventions. Amongst them are the following models:

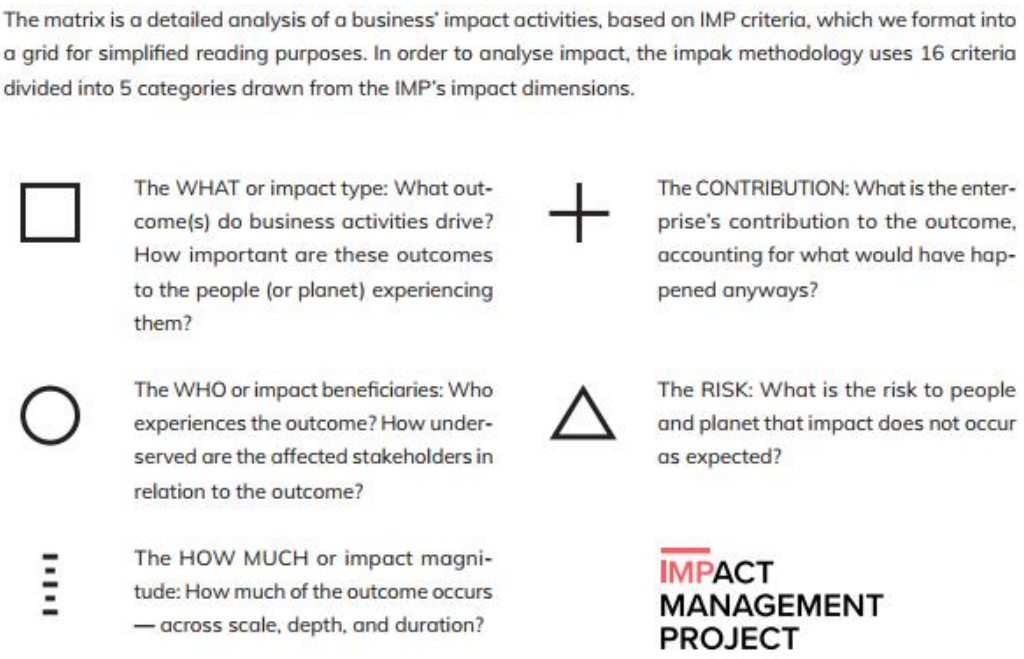
- **Pre/posttest:** Comparison of intervention group before and after the intervention.
- **Historical baseline:** Comparison to past outcomes for a similar population using historical data.
- **Difference comparison**: Comparison with a similar population that is not offered the new intervention but receiving another "treatment as usual".

Corporate methodologies: the case of Impak S².

Impak Finance is a Canadian start-up dedicated to the rating of positive impact initiatives of companies. They develop a home-made methodology to go beyond the limits of the traditional impact measurement method: the ESG and CSR analysis tools. Their methodology is based on the 17 Sustainable Development Goals (SDG's) of the UNDG and on the 16 criterions of the Impact Management Project (IMP), an international collective composed of more than 2000 major players of the impact economy that work along to develop impact measurement methodologies and norms. The 30 questions survey explores the 16 criterions of the IMP through the implementation of the following 5 categories: impact type, impact beneficiaries, impact magnitude, contribution of the company, impact of the failure of the impact initiatives (see Figure 12). The scoring was built to facilitate comparison between companies and thus the readability for investors and consumers. Yet, sizes of the companies have a significant impact on the way corporation implement positive initiatives and mitigate risks. To overcome this

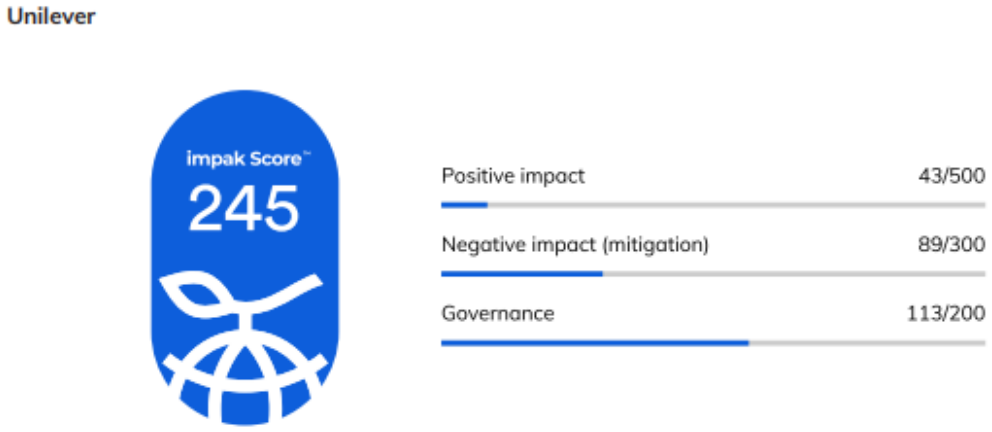
limitation, Impak S² is computed considering the business types of the corporations, divided in 3 categories: A (Act to avoid harm), B (Benefit stakeholders) and C (Contribute to solutions). To advocate for better impact measurement practices and show the limitations of the CSR and ESG scoring, they published an application of their methodology on Unilever (Bernier-Monzon and al., 2020). This case study shows that according to the Dow Jones Sustainability index or ESG/CSR notations, Unilever is a best in class whereas the Impak S² attributes only a low score of sustainability to this big player (see Figure 13). The main differences between those methodologies is that Impak S² focuses on the whole business and the analysis of the impact truly generated relatively to the size and assets of Unilever whereas ESG and CSR reports only evaluate positive initiatives undertaken without giving weight to the size and hidden negative impacts generated by Unilever.

Figure 12: The Impak Score Methodology is based on the 16 criterions of the IMP.



Source: Bernier-Monzon and al., Would the Highest-Rated Responsible Businesses Pass the Impact Test? A case study by Impak, (Revised version - April 2020).

Figure 13: The Impak S² score of Unilever is limited by the poor negative impact mitigation and the disproportionate positive impact promoted.



Source: Bernier-Monzon and al., Would the Highest-Rated Responsible Businesses Pass the Impact Test? A case study by Impak, (Revised version - April 2020).

Greenwashing

Greenwashing was coined by the environmentalist and researcher Jay Westerveld (Sun and al., 2019) to describe outrageous environmental claims in the 80's following the Chevron Scandal. The famous oil producer ran a greenwashing campaign under the motto "People Do" that misled consumers in believing that Chevron was very active in environmental protection. Nowadays scholars commonly use the definition of greenwashing produced by Terrachoice, an environmental consultancy firm: "Greenwashing is the act of misleading consumers regarding the environmental practices of a company or the environmental practices of a product" (Terrachoice, 2007).

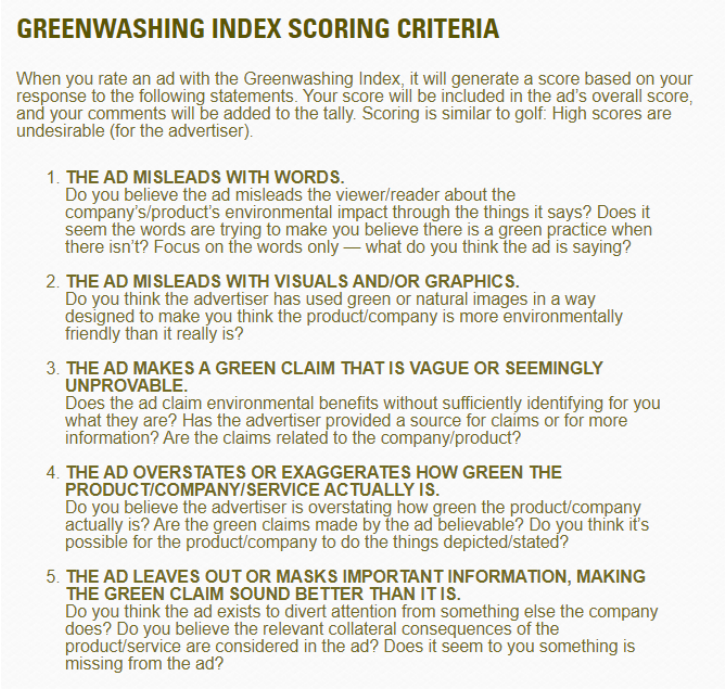
Since the 80's governments make small step to protect people from greenwashing by sharing information to build up public awareness. Since tools to spot greenwashing have only been designed for the advertising industry, existing tools are most often product centered. Amongst the multiple methodologies used on the market, the most important ones are outlined hereafter.

The Greenwashing Risk Index.

In 2007, the journalism University of Oregon and EnviroMedia Social developed a platform were individuals could upload an ad promoting products with environmental features. The crowd of web users were invited to fill a greenwashing index score card composed of 5 questions. The aggregation of all the scored completed by the crowd of webs users gave a final score between 0 points (low risk) and 5 points (high risk). The purpose of the platform was to sensitize public to the aware screening of greenwashing

in advertisements. Details of the 5 criterions and application of the methodology on a Samsung's ad are shown in Figures 14, 15.

Figure 14: A web platform, the Greenwashing Risk Index: criterions.



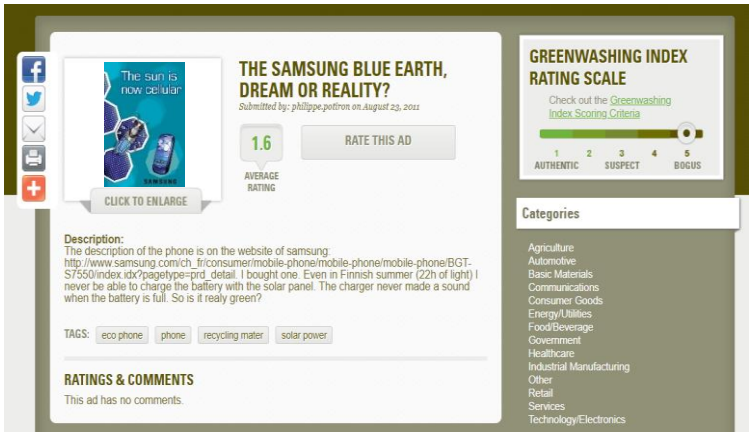
GREENWASHING INDEX SCORING CRITERIA

When you rate an ad with the Greenwashing Index, it will generate a score based on your response to the following statements. Your score will be included in the ad's overall score, and your comments will be added to the tally. Scoring is similar to golf: High scores are undesirable (for the advertiser).

1. **THE AD MISLEADS WITH WORDS.**
   Do you believe the ad misleads the viewer/reader about the company's/product's environmental impact through the things it says? Does it seem the words are trying to make you believe there is a green practice when there isn't? Focus on the words only — what do you think the ad is saying?
2. **THE AD MISLEADS WITH VISUALS AND/OR GRAPHICS.**
   Do you think the advertiser has used green or natural images in a way designed to make you think the product/company is more environmentally friendly than it really is?
3. **THE AD MAKES A GREEN CLAIM THAT IS VAGUE OR SEEMINGLY UNPROVABLE.**
   Does the ad claim environmental benefits without sufficiently identifying for you what they are? Has the advertiser provided a source for claims or for more information? Are the claims related to the company/product?
4. **THE AD OVERSTATES OR EXAGGERATES HOW GREEN THE PRODUCT/COMPANY/SERVICE ACTUALLY IS.**
   Do you believe the advertiser is overstating how green the product/company actually is? Are the green claims made by the ad believable? Do you think it's possible for the product/company to do the things depicted/stated?
5. **THE AD LEAVES OUT OR MASKS IMPORTANT INFORMATION, MAKING THE GREEN CLAIM SOUND BETTER THAN IT IS.**
   Do you think the ad exists to divert attention from something else the company does? Do you believe the relevant collateral consequences of the product/service are considered in the ad? Does it seem to you something is missing from the ad?

Source: greenwashingriskindex.com (web archives), 2007.

Figure 15: A web platform, the Greenwashing Risk Index: the case of Samsung.



Source: greenwashingriskindex.com (web archives).

Terrachoice and the 7 sins of Greenwashing.

Terrachoice developed a score grid (see Appendix 3) to detect greenwashing on ads and packaging and conducted several studies to identify the main trends of greenwashing in advertising. The *7 sins of greenwashing* are as following (Figure 16):

Figure 16: The seven sins of Greenwashing, Terrachoice, 2007.

1. Sin of the Hidden trade-off: Perpetrated when the communication focuses on one of the environmental issue where the product/company has implemented sustainable initiatives without raising attention on other more concerning issues that the product/company does not address.

2. Sin of No Proof: Perpetrated when environmental claims are not sustained by easily available data or third-parties' certifications.

3. Sin of Vagueness: Perpetrated when blanket terms are used to define environmental claims (e.g. "all natural"). Vague wording can mislead consumers who could mistakenly attribute green features to the product.

4. Sin of Irrelevance: Perpetrated when true but useless environmental claims are mentioned (e.g. the environmental practice is mandatory, the product does not contain one ingredient by definition but all the same, the packaging mentions that is free of it).

5. Sin of Lesser of two evils: Committed when a product that has nothing to do with sustainability promotes green features (e.g. organic cigarettes).

6. Sin of Fibbing: Perpetrated when making false environmental claims.

7. Sin of Worshipping False Labels: Perpetrated when creating false or tailor-made label that perfectly match with the current need of the company or using illustrations and green words that gives falsely the impression that the product have a third-party endorsement.

Source: Authors' creation based on 'The Sins of Greenwashing", Terrachoice, 2007.

By extent, Gillepsie (2008), founder of the change agency, Futerra, identifies *10 signs of greenwashing* (see Appendix 4) based on the *7 sins of greenwashing* (Terrachoice, 2007) and adds the following signs to Terrachoice's score grid:

1- **Suggestive pictures:** Illustrations that suggest a groundless green impact. (e.g. a cigarette pack in the sky).
2- **Just not credible**: Promotion of the environmental features endorsed by a dangerous product by nature (e.g. cigarettes).
3- **Gobbledygook** - The use of specific terms that are not familiar to most people.

Through the renewal of its study in 2010 on the Home and Family products exclusively this time, Terrachoice showed that 95% of the products promoting environmental features committed at least 1 out of the 10 sins of greenwashing.

ADEME and the anti-greenwashing guide.

ADEME, the French agency dedicated to the ecological transition, has more recently created a score card to track greenwashing in a similar way than Terrachoice and Futerra. The guide invites marketers to challenge their own communication practices through their score grid to make them realize what is greenwashing and how they can avoid making greenwashing unintentionally. The *9 signs of greenwashing* presented through ADEME Greenwashing guide (2012) are presented on Figure 17 on the next page.

Another area in development explores greenwashing through Corporate Social Responsibility (CSR) reports. Petersson and Dzafic (2016) explored the CSR reports of two companies and used a homemade methodology based on *Impression management* to spot greenwashing. Impression management is defined by Giacalone and al. (1995) as the way an entity can strategically calculate and influence the perception of targeted groups by controlling the information shared with them. The study was then analyzing greenwashing based on 7 criterions within the Impression management framework: (1) Reading Ease Manipulation; (2) Rhetorical;(3) Thematic Manipulation: news content or tone; (4) Visual and Structural Manipulation; (5) Performance Comparison; (6) Choice of Earnings Number: selectivity; (7) Attribution of Performance.

The greenwashing detection methodologies listed below are just examples include in a more exhaustive list of methodologies since the lack of harmonized methodologies has pushed multiple organizations, searchers, universities, journalists, and corporations to develop their own. This list is still representative of the main way of conducting greenwashing analysis in the advertising industry.

Figure 17: The 9 signs of Greenwashing, ADEME, 2012.

1. A true lie: The corporation promotes mistakenly eco-friendly features, or the sustainable initiatives promoted does not exist.

2. A disproportionate promise: The product or service does have environmental features but are granted way more benefits than what they provide or hide their negative impact.

3. Vagueness: The wording is vague and imprecise.

4. A lack of information: The product seems to truly embodies environmental features but there is no information to sustain the environmental claim and no indications about where to find more details.

5. Over suggestive pictures: Illustrations imply that the product possesses groundless environmental features or that the sustainable process has a significant impact it actually does not have.

6. Fake labels: 'Eco-friendly label' misleading customers in believing that they are true labels whereas they are tailor-made labels established for the product without any third-party certification.

7. Irrelevant promotion: Communication about ecology is made through an action ran by the corporation that has no link with the product at stake.

8. **No evidence:** No demonstration or proofs are available on the website of the company or they are not trustworthy.

9. A fake exclusivity: Environmental features are boasted as exclusive whereas all the similar products/ sustainable process must abide by the same requirements.

Source: Authors' creation based on "The 9 signs of Greenwashing", ADEME, 2012.

HYPOTHESIS

Section 1: The Greenwashing risk score.

Hypothesis about the Greenwashing risk score (GWS) are divided in two parts. The first part outlines the assumptions on which is based the score grid designed through this study. The underlying assumptions come from the analysis of the strengths and limits of existing greenwashing detection models which were however not adequate as such to suit crowdfunding specificities. The second part introduces hypothesis made about greenwashing's trends that our Greenwashing risk score is expected to deliver. If the GWS does not confirm the hypothesis below, it can either mean that the hypothesis of the study are wrong, or reveal that our methodology is not robust yet.

Part 1: Rationales underlying the GWS methodology.

In this first part, rationales behind the choice of the underlying hypothesis of our score grid are explained.

- ***Hypothesis 1: No methodology can directly assess whether one fundraising campaign is greenwashing or not.***

On the one hand, greenwashing is a recent subject and the academic literature is still modest. Above all, greenwashing methodologies have mainly been developed to investigate advertising campaigns. Those communication supports are quite different from entrepreneur's pitches on crowdfunding platforms. No previous research has been evaluating whether crowdfunding platforms give rise to greenwashing. On the other hand, impact assessment theories and methodologies (see Theoretical Framework) rely on duration and progress. A visibility of at least 5 years following the fundraising campaign would be necessary to properly assess whether a start-up uses greenwashing or not in its communications. This kind of data is rather difficult to obtain in crowdfunding since start-ups are young, or new, and are not required to provide audited figures on their sustainable impact. As a result, it would be fallacious to pretend to be able to attribute a greenwashing score since there is no way to check the veracity of the information provided by the entrepreneurs. Consequently, a risk scale of greenwashing is more consistent to track greenwashing on the crowdfunding arena. Still, methodologies used in advertising to detect greenwashing can nurture indicators for the said Greenwashing risk scale dedicated to crowdfunding platforms. This new tool would generate a score reflecting the likelihood of one campaign communication practices to be greenwashing from 0 (low risk) to 100 (high risk).

- ***Hypothesis 2: Existing methodologies to spot greenwashing are not suitable for crowdfunding platforms.***

As previously said, methodologies to assess impact relative to investment requires the company to have at least 5 years of existence (because indicators are based on progress, on existing activities/products …) and require lots of publicly available data (mandatory for large companies only) or voluntarily declared by small ones (e.g. personalized survey). Existing methodologies in advertising are inspirational but have some limits. The 9 red flags listed in the Anti-greenwashing guide (ADEME, 2012) (see Appendix 5) or the 7 sins of greenwashing (Terrachoice, 2010) (see Appendix 3) are useful to sum up points and set up threshold to determinate to what extent one entrepreneur uses greenwashing or not. The limits of that kind of score grid is that it is close to a tautology. To ensure comprehension, here is an example: one criterion of ADEME's methodology corresponds to the following question: "*The description seems to give heavier emphasis to the environmental side of the product than what really embodies the product. True or false?"*. It clearly amounts to directly ask the interviewee whether he thinks that the ad does greenwashing or not based on insights more than on objective information. That kind of survey is interesting for entrepreneurs to think about their own communications practices or to sensitize consumers and investors. However, it is even more interesting to reduce the subjectivity of the analysis and deeply understand which criteria makes each one of us consider than one communication item is disproportionate relative to the actual features of one product and thus give rise to the feeling of being confronted with greenwashing. For example, an individual is more likely to attribute green features to a product using the word "eco-friendly" in the title of its pitch. Such behavior can be translated in figures by attributing a weight to each criterion based on their power of influence in misleading investors. For example, a green word in the tittle should have more weight than a green word in the description text.

- ***Hypothesis 3: The more objective are the criterions of the methodology to detect greenwashing, the more robust is the predictive power of the GWS.***

Developing a risk scale enables to define multiple thresholds that reflect the likelihood of one project to use greenwashing. It does not figure out whether a campaign actually uses greenwashing. The fundamental point here is to understand that the aim of this study is not to check whether the project is sustainable enough but **to detect a gap between the communication made on the greenness of a project and the actual green features embodied by the project.** Here the word "project" refers to the entire value chain put in place by the entrepreneur (from the manufacturing to the recycling of the product) (see Figures 6,7). Thus, a project presenting no green features but not promoting environmental claims either will have approximately the same score than a fully sustainable project that does not give

heavier emphasis on the green features than what it really embodies. The underlying idea is not to judge whether the value chain of the project is sustainable but to detect a gap between what the entrepreneur promotes and what he truly does.

- ***Hypothesis 4: To gain in robustness, the model built up in this study focuses on one side of sustainability: the environmental orientation of projects (carbon footprint, toxic components, biodiversity …).***

Greenwashing can be defined as the provision of false inputs that convey misleading information about how a company's products and value chain are environmentally sustainable. Depending on definitions, greenwashing can include social washing (fair working conditions, far-from-employment support, vulnerable people support, affordable products …). This study does not include social practices exclusively to give more accuracy to the analysis. Thus, in this study "greenwashing" includes all the practices that a company can falsely promote in relation to environmental practices (recycling, carbon emission mitigation, water management, biodiversity protection …).

Part 2: Greenwashing trends on crowdfunding platforms.

Greenwashing has increasingly grown in recent years. Since reward-based crowdfunding is similar to advertising in the sense that backers invest money for pre-paid products more than for profits distributions, one can expect the similar trends regarding the presence of greenwashing on crowdfunding platforms. Thanks to the Greenwashing risk score, this study tests the following hypothesis:

- ***Hypothesis 5: Projects highlighting their environmental orientation are more likely to use greenwashing.***

Because greenwashing has spread in the advertising industry and reward-based crowdfunding is similar in that people prepaid rewards that are often products in the Technology area, there is a legitimate fear that greenwashing is spreading on online investments as well. Besides, scholars show that sustainable ventures have more success when they talk about the values endorsed by their project rather than financial balance (Hemer, 2011; Ibrahim, 2012; Bartenberger and Leitner, 2013). Marketing methodologies also outlines the power of illustrations to mislead consumers (here, investors) (Gillepsie, 2008; ADEME, 2012). As a result, this study suggests that amongst projects using green features, some of them are likely to mislead potential investors by falsely promoting eco-friendly features.

- ***Hypothesis 6: The risk of greenwashing increases over time on crowdfunding platforms.***

Terrachoice (2010) conducted a series of studies from 2007 to 2010 in North America testing to what extent there was greenwashing on products' packaging and advertisements. Results indicated that greenwashed communication was increasingly popular and that surprisingly eco-labels were mostly misleading. The expansion of greenwashing is likely to have grown over the last decade as multiple scandals signal in advertising: Westinghouse advertisement (2013-2016) boasting the sustainability of their nuclear energy production facilities failing to mention their appearance in front of the Nuclear Regulatory Commission for concealing flaws in its reactor designs and their accountability in multiple leakages due to defective materials (Watson, 2016). Volkswagen emissions scandal (2008-2005) is as well an instructive illustration amongst multiple other examples. As a result, this study suggests that crowdfunding is likely to show similar trends than the advertising industry regarding the evolution of greenwashing.

Section 2: Applications of the Greenwashing risk score on crowdfunding success.

Part 1: Greenwashing impact on crowdfunding success.

- ***Hypothesis 7: The use of greenwashing in a project description boosts the performance of crowdfunding campaigns.***

Previous academic literature has put the shed on multiple drivers of success on crowdfunding platforms. Our study will start from those determinants to build a regression model that possess the more significant predictive power as possible. The final goal is to obtain the more precise coefficient as possible of the influence of the Greenwashing risk score on a campaign's success. Based on the previous academic literature, the model has been fed by the variables introduced hereafter. In reward-based crowdfunding, the funding goal *(LogGoal*) can have a negative influence on the campaign's success since this form of crowdfunding mostly aims at selling products to restricted investors (e.g. Mollick, 2014; Kuppuswamy and Bayus, 2017). Inputting whether a project is *US*-based or not is a powerful information in this study since the analysis is conducted through a US-based platform and our sample include a majority (59%) of Americans. The degree of preparedness of the campaign's pitch signals involvement of the management team from the potential investor's standpoint (Hui and al., 2012; Mollick and Kuppuswamy, 2014; Bi and al., 2017). The number of words in the pitch description (*Wordcount*) can

testify that entrepreneurs provide details about their projects or on the contrary, that entrepreneurs did not take time to synthetize a pre-existing communication pitch not designed for crowdfunding purposes. The presence of a *Video* is a signal that entrepreneurs put efforts to produce attractive communication outputs (Frydrych and al., 2014; Bi and al., 2017; Bento and al., 2019), yet video are becoming a new standard on Kickstarter thus this variable is likely to only modestly contribute to the model. The number of *Updates* marks the willingness from the entrepreneur to be transparent to their backers and suggest a potential ability to grow a community from their project page (Bento and al., 2019). Community is a driver of investment for restricted investors (Vismara, 2017). The product differentiation also notifies that entrepreneurs planned their marketing mix and customers segmentation: the number of *Rewards* is a good proxy for that (Hu and al., 2015). Investment peaks also depend on the *Funding Period* chosen by the funder for the call (Cordova and al., 2015). Funder's network signals to investors that the funder brings together a community and is able to build solid relationships with the stakeholders, Facebook's friends of the funder are often used as a proxy for this (Mollick and Kuppuswamy, 2014). Unfortunately, due to a lack of available data, this variable has not been included in the model of this study. *Endorsement* capture the support from the media (press, TV, academics …) (Mollick and Kuppuswamy, 2014). Signals of altruism like commitment to give part of the *Profit* to charities can boost campaign's performances. Women funders have been proven to produce more successful campaign than men (Bento and al., 2019). All the previously cited variables were used in the model built by Bento and al. (2019) on which this study is based, except for *Wordcounts* and *Endorsement* that have been included based on the assumption that they could reinforce the model. Finally, to test whether the use of greenwashing boosts campaigns performance in the crowdfunding arena, the study inserts the Greenwashing risk score to the multiple linear regression model. As explained before (see Literature Review), the main greenwashing drivers stem from the lack of regulation about greenwashing and the growing demands from customers and investors for sustainable firms (Delmas and al., 2011). The lack of regulation is particularly detrimental to crowdfunders since the asymmetry of information is huge on such platforms, the committed amounts can be as high as thousands of dollars and no incentives are given to entrepreneurs to act in good faith. Besides, lots of drivers of success in the sustainable crowdfunding came from the values endorsed by projects and not from their financial metrics (Lehner, 2013). Some scholars even show that under certain conditions, the sustainable orientation of one business opportunity improves the performance of one campaign irrespective of the quality of the description pitch (Calic and Mosakowski, 2016). Because greenwashing has spread in the advertising industry and reward-based crowdfunding is similar in that people prepaid rewards that are often object in the Technology area, there is a legitimate fear that greenwashing spreads on online investments as well. As a result, this study suggests that the use of greenwashing can increase the performance of reward-based crowdfunding.

Part 2: Greenwashing and post campaign development success.

- ***Hypothesis 8: Corporations using greenwashing during their crowdfunding campaigns are more likely to fail to survive post-campaign.***

Similarly, the impact of greenwashing on the post-campaign development of corporations have been measured by using previous academics literature determinants of success as independent variables in the multiple linear regression. Other new variables which may be relevant to explain the post-campaign development success of a project have been included in the model to possibly increase the explanatory power of the regression and give more accuracy to the analysis of the impact of the GWS variable. From the previous academic literature (Bento and al., 2019), this study takes up signals of a qualitative management team *(Updates, Rewards)* and team characteristics *(Genders, US)*. The Key Performance Indicators (KPIs) of the fundraising campaign (*Pledge*, *PledgebyGoal*) and business characteristics (*Profit*) are also reconsidered through this study. The variable *New backers* has been newly included in the model to get new information between the percentage of investors that has never invested money on Kickstarter and the healthy development of a venture post-campaign. The presence of New backers suggests that either people heard about the project by word-of-mouth and subscribe on Kickstarter to invest in it, either web users choose the project through random screening because it was convincing (or appealing). *Funding Period*, i.e. the duration of the campaign expressed in days, has been newly integrated as well. The duration of a crowdfunding period reveals the dynamic of the sector in which the project is positioned either in term of the global market demands and in terms of attractiveness of the product or service offered by the entrepreneur. The funding period can thus give insights about the future rhythm of the market post-campaign and the likelihood that the project offering, and supply chain fit the market. Endorsement also complements the model by providing possible evidence that a strong network and support eases the development of one business. At the heart of this study, the Greenwashing risk score is finally included to the multiple linear regression model. A high-risk score of greenwashing reveals that the entrepreneur most probably lied about the environmental feature of its business to boost the performance of the fundraising campaign. Intuitively, one could presage that a business built on lies is more at risk of failure in the years following the crowdfunding campaign since stakeholders can identify the scam and not trust the venture anymore or worse, by hurting the brand image by alerting the community. GWS also signalizes that the entrepreneur found no other way to enhance the attractiveness of the project than falsely use environmental claims. This in turn could outline a lack of competitive advantage in the project that could threaten its sustainability on the competitive market.

Table 2: Synthesis-table of the hypothesis of the study.

Number	Hypothesis
H1	No methodology can directly assess whether one fundraising campaign is greenwashing or not.
H2	Existing methodologies to spot greenwashing are not suitable for crowdfunding platforms.
H3	The more objective are the criterions of the methodology to detect greenwashing, the more robust is the predictive power of the GWS.
H4	To gain in robustness, the model built up in this study focuses on one side of sustainability: the environmental orientation of projects.
H5	Projects highlighting their environmental orientation are more likely to use greenwashing.
H6	The risk of greenwashing increases over time on crowdfunding platforms.
H7	The use of greenwashing in a project description boosts the performance of crowdfunding campaigns.
H8	Corporations using greenwashing during their crowdfunding campaigns are more likely to fail to survive post-campaign.

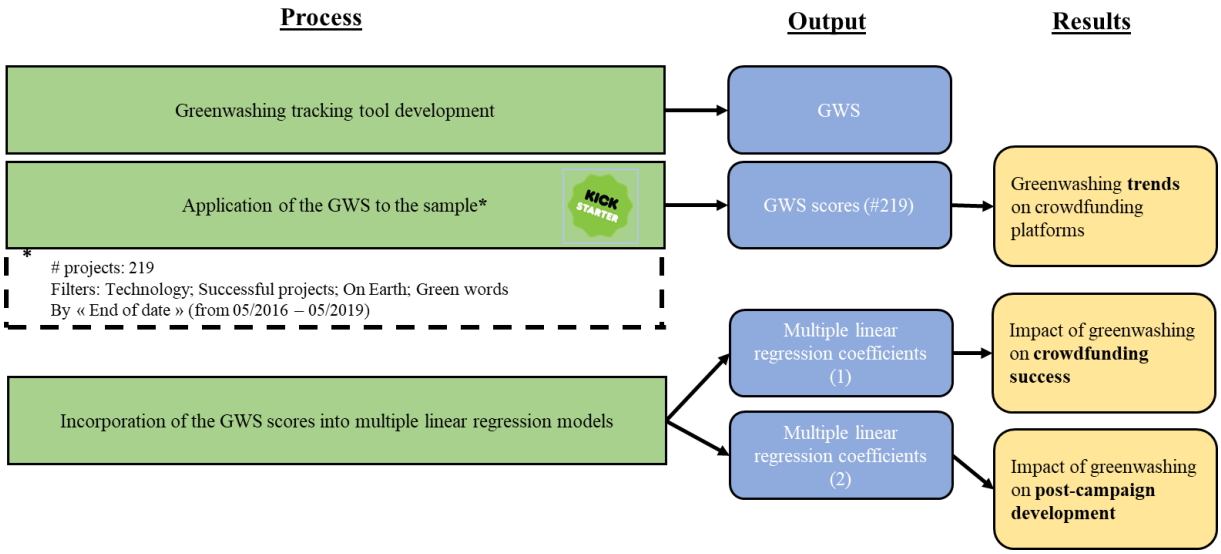
Source: Authors' creation.

PART II: EMPIRICAL PART

METHODOLOGY

The objective of the Greenwashing risk score (GWS) is to provide an indicator of the likelihood that one entrepreneur uses greenwashing in its pitch. The GWS is computed for each project of the unique sample (see more details in Data). This study explores the greenwashing patterns on the reward-based crowdfunding platforms Kickstarter, discusses the score grid limits and share recommendations to improve the efficiency of the scoring methodology. Two applications of the GWS are then proposed in the second part on a fixed sample (Methodology, Part 2).

Figure 18: Synthesis-figure of the research process.



Source: Author's creation

Part 1: Greenwashing risk score methodology.

Based on our analysis of previous existing methodologies to detect greenwashing (see Theoretical Framework section) and the related assumptions (see Table 2), the risk scale will provide a new (H1) greenwashing risk (H2) scoring (0 – Low risk / 100 – High risk), assessing sustainable claims focusing on environmental claims exclusively (H4) by using the more objective criterion as possible (H3).

The risk scale will then have to process in 4 steps:

1) The detection of which green features are used and in which proportions (see Appendix 7 to have a global view over the GWS methodology). → The more green features there are (without assessing if it is greenwashing or not), the more points are added to the final score.

2) The assessment of relationship between the quantity and the quality of the green features used for communications purposes. In other words, the second step aims at analyzing the environmental claims states to figure out their likelihood to participate to greenwashing. → The less qualitative

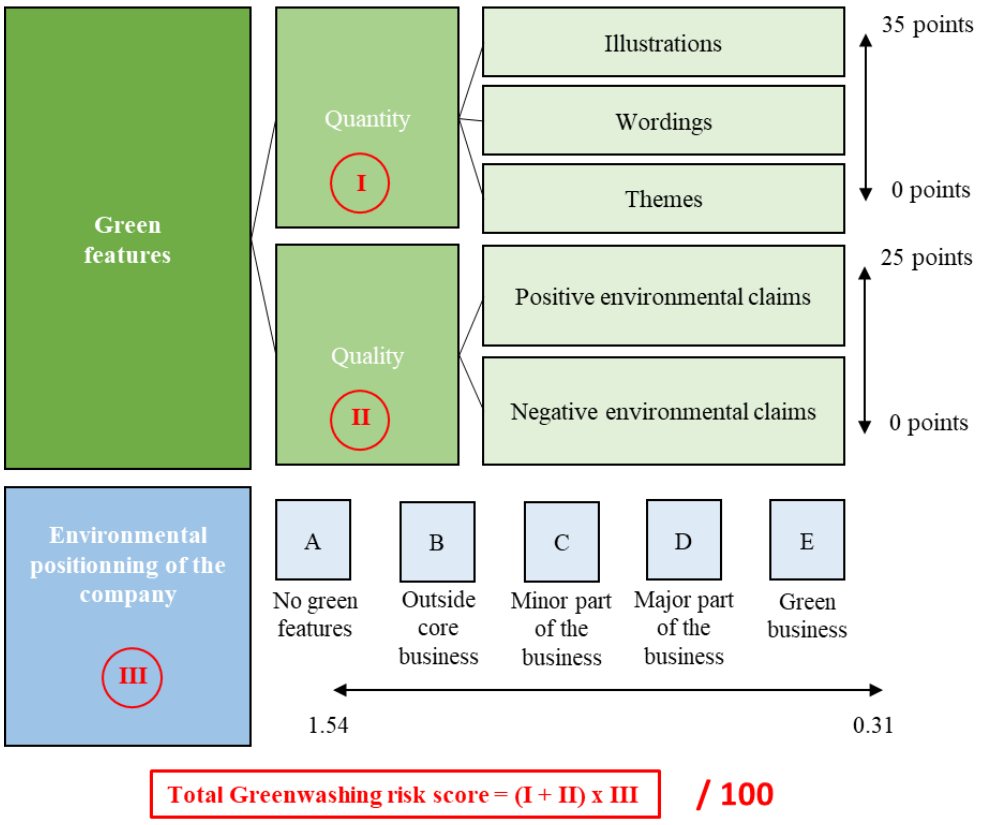
information are given to sustain the positive impact arguments stated by the entrepreneur, the less points are added to the final score.

Note: Coefficients are implemented to reflect the relative impact of some green features on the attractiveness of one project and thus that represent a heavier risk of greenwashing. For example, a green word (i.e. a blanket term currently used in greenwashing, all the green words used in this study are listed in Appendix 8) in the title or in the short description of the product will have more impact on an investor than a green word among the description and thus is granted an higher coefficient. Coefficients granted to each criterion are enumerated in Part 2.

3) The analysis of the actual green features of the project. This is estimated looking at the weight of the green feature relatively to the entire value chain of the product (See Theoretical Framework, Figure 6). → The greener the declared value chain of the project, the lower the coefficient (<1).

4) A final score is computed. → The total score (given by the sum of first and second steps), is weighted by a coefficient based on the level of actual green features of the project (third step). The coefficient is based on the environmental positioning of the company and will allow to express in figures the gap between green features promoted and true features of the project.

Figure 1: Synthesis of the Greenwashing risk score.



Source: Author's creation

Rationales underlying the choice of our criterions.

The methodology introduced in this study consists in computing a score that reflects the likelihood of one project to use greenwashing to successfully raise money on Kickstarter. The score goes from 0 (very low risk of greenwashing) to 100 points (high risk of greenwashing). To reduce the bias for the searcher to see the score increase according to its choices (that can lead him to unconsciously modify the score of other criteria to adjust the final scoring based on its own intuition) coefficients are hidden and the grid is filled only by putting 1 or 0 in the cells. Besides, each criterion has been set up with indicators that are the most neutral and accurate as possible. Below are described the choices of such indicators and their neutrality assessment.

The first part consists in summing points when green features are spotted (no matter if the communication is proportionate to the actual features of the product, the coefficient implemented in the third part will adjust the score to reflect such gap).

- **Description.**

Regarding the listed items below, more weights are given to the ones judged as being the most eye-catching by common sense and previous academic literature and thus present more risk to mislead investors. Information about where data can be found on the web page is given in Appendix 10.

Illustrations (see Table 7)

Illustrations are frequently used by existing methodologies to detect greenwashing (e.g "*Suggestive Pictures"*, Gillepsie, 2008). This study evaluates the share of colors associated with Nature and the natural elements spotted on illustrations as well.

Indicators: colors referring to nature (blue/green) (Singh, 2006) and natural elements (trees, forest, animals, …) (Russel and al., 2015) are analyzed.
Coefficient: from 0 to 3.75. Illustrations are highly eye-catching for web users.
Neutrality assessment: coefficients are set according to quantitative data regarding the share of colors (blue/green) and natural elements across all the illustrations on the web page.
Limits: subjectivity is required regarding the decision on whether natural elements give to the viewer the idea of nature/greenness. Yet, it is also interesting to see which elements generate the searcher's intuition of nature since greenwashing appeals to gut feeling. Thus, a part of subjectivity is welcome here.

Table7: Greenwashing risk score criterions: illustrations.

Data	Criteria	Points allocation rules	Coefficients	Scoring
ILLUSTRATIONS	In which proportion the color green (or blue) is used?	**Indications:** - Kickstarter's logo is not included in the scoring. - Green/blue spotting has to be considererred out of natural elements (e.g. if there is a tree, there is undoubtedly green but it should not be included in the scoring since natural elements will be accounted for in the next criteria based on natural elements). **Points allocations:** Put 1 in the scoring cell next to the category where the project belongs.		
		• No green/blue on the illustrations.	0	
		• There are green/blue on some illustrations but it does not seem to be necessarily linked with the idea of nature/greenness. → e.g. : part of the product is green by nature like electrical wirings. → e.g. : lots of blue is used for a milk product because it is the reference color for beverages and not only because it makes people think to sustainability.	0.94	
		• A minor part (<50%) of the illustrations are green/blue and seems to be necessarily linked with the idea of nature or greenness.	1.88	
		• A major part (>50%) of the illustrations are green/blue and make the viewer think of nature or greenness.	2.81	
		• A major part (>50%) of the illustrations are green/blue and and seems to give environmental features to the product.	3.75	
	In which proportion natural elements are used?	**Indications:** - Natural elements include: forest, tree, plants, wood, water, oceans, sky, mountains, countryside, outdoors, bugs, ... **Points allocations:** Put 1 in the scoring cell next to the category where the project belongs.		
		• No natural elements on the illustrations.	0	
		• There are natural elements on some illustrations but the intent behind the staging seems to be more the set up of a quiet atmosphere than the promotion of eco-friendliness. → e.g. : a plant on a desk near to the hi-tech product,a window behind the product.	0.94	
		• A minor part (<50%) of the illustrations includes natural elements that make the viewer think of eco-friendliness. → e.g. : icones with trees, and peoples / a product in a forest on less than 50% of the illustrations.	1.88	
		• A major part (>50%) of the illustrations includes natural elements that make the viewer think of eco-friendliness. → e.g. : icones with trees, and peoples / a product in a forest on more than 50% of the illustrations.	2.81	
		• A major part (>50%) of the illustrations includes natural elements and seems to give environmental features to the product. → e.g. : a product in a forest supported by bullet words lik "eco-friendly", "pesticides-free" on more than 50% of the illustrations.	3.75	

Source: Authors' creation.

Title (see Table 8)

Title is an important feature since it appears not only on the campaign page but also on the results page of any related research. Thus, it can make people click on the project sticker and possibly invest in it.

Coefficient: from 0 to 10.

Indicators: presence of at least 1 green word in the short pitch description. Green words are listed in Appendix 8. Then, the searcher assesses if such green word(s) give environmental features to the project or not (no matter if the project embodies green features). If the title contains green words that seems to give environmental features to the project, then more points are added to the score. If the green words contained in the title only seem to be necessary to describe the business, little points are attributed. Indeed, it would not be fair not to give some points all the same since some entrepreneurs can use a more subtle kind of greenwashing.

Neutrality: coefficients are set according to quantitative data regarding the existence or not of green word(s) giving an environmental perspective to the project.

Limits: subjectivity is required regarding the decision on whether the green word(s) give to the project environmental features. Yet, it is also interesting to investigate which green word(s) lead the searcher to attribute green characteristics to a project.

Table 8: Greenwashing risk score criterions: Title.

Data	Criteria	Points allocation rules	Coefficients	Scoring
TITLE	Are there green words in the title of the product/service ?	**Indications:** - The title of the project is the first sentence of the webpage. It appears in bold letter on the research page where all the projects are displayed. - The word has to be included in the green words list (see Appendix 8). **Points allocations:** Put 1 in the scoring cell next to the category where the project belongs.		
		• At least one green word in the title of the product/service.	10	
		• At least one green word in the title of the product/service, but doesn't seems to give environmental sense to the tittle.	5	
		• No green words in the title of the product/service.	0	

Source: Authors' creation.

Short pitch description (see Table 9).

Short pitch description is an important feature since it is one of the few elements that web users see on the campaign page without scrolling.

Coefficient: from 0 to 10.
Indicators: presence of at least 1 green word (see Appendix 8) in the short pitch description. Then, the searcher assesses if such green word(s) give environmental features to the project or not (no matter if the project embodies green features). If the project short pitch description contains green words that seems to give environmental features to the project, then more points are added to the score.
Neutrality: coefficients are set according to quantitative data regarding the existence or not of green word(s) giving an environmental perspective to the project.
Limits: subjectivity is required regarding the decision on whether the green word(s) gives to the project environmental features. Yet, it is also interesting to investigate which green word(s) lead the searcher to attribute green characteristics to a project.

Table 9: Greenwashing risk score criterions: short pitch description.

Data	Criteria	Points allocation rules	Coefficients	Scoring
SHORT PITCH	Are there green words in the short pitch description of the product/service ?	**Indications:** - The "short pitch" of the project is the second sentence of the webpage, on the right side of the first illustration. It appears in bold letter on the research page where all the projects appear. - The word has to be included in the green words list. **Points allocations**: Put 1 in the scoring cell next to the category where the project belongs.		
		• At least one green word in the short pitch of the product/service	10	
		• At least one green word in the short pitch of the product/service, but doesn't seems to give environmental sense to the tittle. → e.g. : "TripOutside.com: an easier way to book outdoor adventures!": outdoors is part of the green words list bu seems to only describe the activity here more than highlighting the natural aspect of it.	5	
		• No green word in the short pitch of the product/service.	0	

Source: Authors' creation.

Green words (see Table 10).

Green words represent words that make web users think about nature or eco-friendliness. The academic literature demonstrates multiple times that linguistic features and words have a huge impact on

consumers beliefs: green words are likely to make investors mistakenly believe that one product endorsed green features (Young-Joo, 2011; Parhankangas and Renko, 2017).

Coefficient: from 0 to 15.

Indicators: Green words density in the text description. It is defined thanks to a software: http://www.outils-referencement.com/outils/mots-cles/densite. The software withdraws "stop words" and make it possible to look for the density of chosen keywords (see list of green words in Appendix 8 and stop words in Appendix 9*)*.An analysis made on a sample of 30 random successful projects on Kickstarter shows densities of green words always include between 0% and 15%. Having a coefficient of 15 to allocate, the choice was made to give 1 point by percentage of green words point.

Neutrality: coefficients are set according to quantitative data regarding the existence or not of green word(s) giving an environmental perspective to the project. The same list of green words/ stop words is used for all projects and the same methodology is applied.

Limits: green words list is limited, and some green words like "safe" can be used with no greenwashing finality.

Table 10: Greenwashing risk score criterions: green words.

Data	Criteria	Points allocation rules	Coefficients	Scoring
STORY/ RISK AND CHALLENGES/ ENVIRONMENTAL COMMITMENTS	In which proportion does the description contains green words ?	Enter the total number of words (units, **text and pictures included)** in the following empty cell. **Indications:** - All the words from "Story" to the last word before "Learn about accountability […] Kickstarter". - Words on illustrations should be included (except illustrations summarizing the rewards for investors, and list of press partnerships, labels, third-parties certifications). - Words on videos are not included in the count. - The total number of words exclude "stop words" (Appendix 9).		
		Enter the total number of **green** words (units, **without pictures**) in the following empty cell. **Indications:** - All the words from "Story" to the last word before "Learn about accountability […] Kickstarter". - Words on illustrations should be included (except those illustration summarizing the rewards for investors, and list of press partnerships, labels, third-parties certifications). - Words on videos are not included in the count.		
		Enter the total number of **green** words (units, **on pictures**) in the following empty cell. **Indications:** - All the words from "Story" to the last word before "Learn about accountability […] Kickstarter". - Words on illustrations should be included (except those illustration summarizing the rewards for investors, and list of press partnerships, labels, certifications). - Words on videos are not included in the count.		
		(Automatic) Compute the % of green words used. **Indication:** Formula: Total number of green words / Total number of words.		
		(Automatic) Points allocation relative to green words used %.	1	
		Indications: -The "environmental commitment" part is optional. If filled, it appears at the end of the webpage. **Points allocations:** Put 1 in the scoring cell next to each part filled by the entrepreneur.		

Source: Authors' creation

Environmental commitments (see Table 11)

Environmental commitments is an interesting feature since it is the first step of Kickstarter towards impact measurement standardization in its platform. Indeed, this new feature has been created by the platform in 2018 to encourage entrepreneurs to report their positive impact initiatives (a guide is provided by Kickstarter to give some details about the way one can report its impact). Entrepreneurs can choose between the different step of a supply chain and explain how they manage it to be sustainable (or how they plan to manage their supply chain to be sustainable over a defined time horizon).

Coefficient: from 0 to 2.5.
Indicators: the number of "environmental commitments" options filled on the Kickstarter's project descriptions are counted. The more parts are filled, the more risk of greenwashing there is since the entrepreneur uses environmental claims. The more parts filled; the more points are added to the GWS.
Neutrality: only quantitative data.
Limits: such arguments cannot provide qualitative information about the actual green features of the project, but the level of information is assessed in the next criteria.

Table 11: Greenwashing risk score criterions: environmental commitments.

Data	Criteria	Points allocation rules	Coefficients	Scoring
ENVIRONMENTAL COMMITMENTS	Which part(s) is/are completed ?	• Reusability and reyclability	0.5	
		• Sustainable materials	0.5	
		• Environmentally friendly factories	0.5	
		• Sustainable fulfillment and distribution	0.5	
		• Something else	0.5	
		Subtotal		

Source: Authors' creation

- **Impact assessment measure.**

Lots of existing methodologies to spot greenwashing analyze the way entrepreneurs make environmental claims to spot a possible disproportion between features borne by the project and communication purposes (For example, Gillepsie, 2008: *Sins of No Proof, Sins of Irrelevance, Sins of Vagueness*, …). Yet, in crowdfunding even more than in advertising or CSR reports, it is hardly impossible to check the veracity of the information delivered. It is thus hard to detect a disproportion based on something else than gut feeling. Gut feeling is not a good tool to detect greenwashing since greenwashing rely on manipulating hints. One way to assess whether a green communication is close to greenwashing more objectively is to analyze whether the environmental arguments put forward by entrepreneurs are sustained by a fair level of information. If it is not the case, more points are added to the score. The rationale is to give more points for entrepreneurs enhancing their project with lots of

vague environmental arguments than to those making few green communications but further explained by tangible facts.

Communication about the positive impact of the business (see Table 12).

To evaluate the quality of the communication made about the positive impact of the business, 4 criterions have been defined:

Table 12: Greenwashing Score criterions: impact measurement.

Data	Criteria	Points allocation rules	Coefficients	Scoring
CAMPAIGN PAGE	To what extent does the entrepreneur provides evidence that its environmental approach is real ?	**Indications:** - The level of information should be assessed thanks to all the description areas (not only the environmental commitments part). - In the case of several environmental arguments put forward by the entrepreneur, choose the category concerning the level of information of the majority of the arguments (>50%). - The level of information will be check according to 5 criteriions: • ***Vagueness of the arguments:*** environemental arguments loose in information level if they are made of blanket terms. • ***Figured impact:*** environmental arguments gain in information level if they are sustained by figures bringing information about the impact generated, the defined target and planning. Besides, environmental arguments gain in information level if figures are given at the company-level rather than at the industry or at a larger scale. • ***Impact measurement methodology:*** environmental arguments gain in information level if the entrepreneur can describe the way he will measure its progress (material items, unity, frequency , ...) to demonstrate its willingness to create a sustainable business. • ***Meaning*** : environmental arguments gain in information level if the entrepreneur provides information that gives perspective to the previous information given (e.g normative tresholds of the industry, regulation standards, clarification of the specifics terms). **Points allocation:** For each criteria, choose the category that best describes the way information are released.		

Source: Authors' creation

1) Vagueness (see Table 13)

Indicators: environmental arguments loose in information level if they are made of blanket terms (Furlow, 2010). The more blanket terms are used, the more points are added to the score.

Coefficient: from 0 to 5.

Table 13: Greenwashing risk score criterions: vagueness of arguments.

Data	Criteria	Points allocation rules	Coefficients	Scoring
CAMPAIGN PAGE	To what extent does the entrepreneur provides evidence that its environmental approach is real ?	• **Vagueness of arguments** (put 1 in the cell next to the category where the project belongs, let 0 in the other cells)		
		Environmental arguments made of blanket terms only.	5	
		Environmental arguments made of blanket terms with some general figures.	2.5	
		Environmental arguments made of necessary blanket terms supplemented by specific information (figures, specific terms).	0	
		No environmental arguments.	0	

Source: Authors' creation

2) Metrics (see Table 14).

Indicators: environmental arguments gain in information level if they are sustained by figures bringing information about the impact generated, the defined targets and their planning. Besides, environmental arguments gain in information level if figures are given at the company-level rather than at the industry-

level or even at a larger scale. The less numerous figures are and the more general information are, the more points are added to the score to illustrate an higher risk of greenwashing.

Coefficient: from 0 to 5.

Table 14: Greenwashing risk score criterions: figured impact.

Data	Criteria	Points allocation rules	Coefficients	Scoring
CAMPAIGN PAGE	To what extent does the entrepreneur provides evidence that its environmental approach is real ?	• **Figured impact** (put 1 in the cell next to the category where the project belongs, let 0 in the other cells)		
		Environmental arguments are not sustained by any figure.	5	
		Environmental arguments are sustained by general figures at a larger-scale than the company only (industry, world …).	2.5	
		Environmental arguments are sustained by few (<50%) figures including figures directly linked to the project (impact generated, targets, planning).	1.5	
		Environmental arguments are sustained by most (>50%) of the following figures directly linked to the project (impact generated, targets, planning).	0	
		No environmental arguments.	0	

Source: Authors' creation

3) Methodology (see Table 15).

Indicators: environmental arguments gain in information level if the entrepreneur defines the process he has or will use to measure the evolution of the positive impact generated (material items, units, frequency, ...). The mere existence of defined metrics signals its willingness to manage a sustainable business. The less information is given about the methodology, the more points are added to the score, because the risk of greenwashing increases.

Coefficient: from 0 to 5.

Table 15: Greenwashing risk score criterions: impact measurement methodology.

Data	Criteria	Points allocation rules	Coefficients	Scoring
CAMPAIGN PAGE	To what extent does the entrepreneur provides evidence that its environmental approach is real ?	• **Impact measurement methodology** (put 1 in the cell next to the category where the project belongs, let 0 in the other cells)		
		No measurement process is described or stated.	5	
		A measurement methodology (or certification/label) is stated without any explanation.	2.5	
		A measurement methodology (or certification/label) is stated with few (<50%) of the following information (material items, unity, frequency, …).	1.5	
		A measurement methodology (or certification/label) is stated with most (>50%) of the following information (material items, unity, frequency, …).	0	
		No environmental arguments.	0	

Source: Authors' creation

4) Meaning (see Table 16).

Indicators: environmental arguments gain in information level if the entrepreneur provides information and reference values that give perspective to the figures (e.g normative threshold of the industry, regulation standards, clarification of the specifics terms). The less meaning is given to the information provided; the more points are added to the score because the risk of greenwashing increases.

Coefficient: from 0 to 5.

Table 16: Greenwashing risk score criterions: meaning.

Data	Criteria	Points allocation rules	Coefficients	Scoring
CAMPAIGN PAGE	To what extent does the entrepreneur provides evidence that its environmental approach is real ?	• **Meaning** (put 1 in the cell next to the category where the project belongs, let 0 in the other cells)		
		No meaning, interpretation are given to the figures stated (regulation standards, industry specifics) and complex terms are not defined.	5	
		Minor part (<50%) of the complex terms are defined / figures interpreted (regulation standards, industry specifics).	2.5	
		Major part (>50%) of the complex terms are defined / figures interpred ((regulation standards, industry specifics).	0	
		No environmental arguments.	0	
		Subtotal:		

Source: Authors' creation

Communication about the negative impact of the business (see Table 17):

Indicators: another important risk feature to check is whether the entrepreneur communicates about its negative impact. If the entrepreneur provides only information about positive impacts without sharing information about negative impacts, there is a higher risk of greenwashing (hidden facts). However, if the entrepreneur does not communicate at all about positive impacts and neither about negative impacts, then no points are added since there is no obvious distortion of information.
*Coefficients***:** From 0 to 5.

Table 17: Greenwashing risk score criterions: negative externalities.

Data	Criteria	Points allocation rules	Coefficients	Scoring
CAMPAIGN PAGE	Does the entrepreneur give information about the negative impact generated by the business ?	**Indications:** - The level information should be assessed thanks to all the description areas (not only the environmental commitments part). - If the entrepreneur has not shared any positive environmental arguments, thus allocate 0 to the scoring. - In the case of several negative externalities put forward by the entrepreneur, choose the category concerning the level of information of the majority of the arguments (>50%). **Points allocation:** Put 1 in the category where the project belongs, let 0 in the other cells.		
		• At least 1 positive environmental argument is given but no information are given about the negative externalities of the activity.	5	
		• At least 1 positive environmental argument is given but negative externalities seem to be only implied by the wording without clear statement nor measurement process.	4	
		• At least 1 positive environmental argument is given but negative externalities are mentionned for competitors, as if the project offered a full solution to the problem.	3	
		• At least 1 positive environmental argument is given and some information about the negative impact generated by the project is given with blanket terms but indicating that the project should take care of it.	2	
		• At least 1 positive environmental argument is given and information about the negative impact generated by the project is given with some details (at least one of the following elements: figures, target, deadlines, measurement methodology).	1	
		• At least 1 positive environmental argument is given and information about the negative impact generated by the project are given with high details (most of the following elements: figures, target, deadlines, measurement methodology).	0	
		• No positive environmental arguments are given neither negative externalities.	0	

Source: Authors' creation

- **Environmental positioning of the company (see Table 18):**

The environmental positioning of the company is the backbone of the GWS. It derives from Impak S² score grid that includes involvement of the company towards sustainability at company-level through 3 categories: A (Act to avoid harm), B (Benefit stakeholders) and C (Contribute to solutions). The method introduced in this study is based detecting whether there is a gap between the greenness of a project and its green communication. It is estimated by looking at the weight of the green features communicated

about the project relatively to sustainability declared of its entire supply chain including manufacturing, consumption, and recycling (see Figure 6)

Indicator: The searcher will position one project amongst one of the 5 categories below regarding information shared in its online pitch about the actual green features declared (third parties certification, use of renewable energies, carbon footprint reduction, …) and the searcher's common sense about the industry (e.g. electronic cigarettes will not be positioned the same way than electrical bikes).

Environmental positioning categories:

A) No environmental features: the project does not seem to embody any green features (no sustainable raw materials, no green output production, no recycling options, …).

B) Outside of the core business: the positive impact of the project does not pertain to the product or service itself but rather on external parties (% of the proceeds donated to charities, tree transplantation to compensate carbon emissions) or is part of an industry that is greener by nature without having building a sustainable value chain at the company level.
→ e.g.: online signing app (industry: reduce papers but the company has not studied the pollution it is emitting by saving online data and so on ...).

C) Minor part of the product: the green features embodied by the project seem to be only a minor part of it (<50%: part of the project is made of recyclable material; the project burns off less power than others).

D) Major part of the product: the green features embodied by the project seem to represent the major part of it (>50%: part of the project is made of recyclable material; the project burns off less power than other ones, the project is economical in energy and recyclable at the end of its life cycle, etc. …).

E) Whole enterprise is concerned: all the value chain of the project has been established to make it the most sustainable (sustainable raw materials, the product consumes less energy than others, is repairable, recyclable, etc. …).

Coefficients: From 0.31 to 1.54**.** The rationale behind those figures was to give a 65 points weight of the green score to the quantity and quality of green features, and the remaining 35 points to the coefficient to adjust the final scoring according to the lag detected between the green features promoted and the green features embodied by the project. Thus, a corporation without any environmental features will be

granted a coefficient of 1.538 (i.e.100/65). Other coefficients have been equally shared (100/65/5) = 0.307 and sum up along the 5 categories from category E to A. The hypothesis here is to consider that the green communication of a company should be proportionate to its true environmental positioning. The score here is a coefficient that gives more or less weight to the total GWS of the project. Below is the formula applied to obtain the final scoring:

$$\boldsymbol{GWS} = (\boldsymbol{Total\ green\ features\ points\ relating\ to\ descriptive\ items} + \boldsymbol{Total\ green\ features\ points\ relating\ to\ impact\ assessment\ measure\ items}) \times \boldsymbol{Environmental\ positioning\ coefficient}$$

Below are some examples to better understand how this coefficient expresses in numbers a gap between green features and the actual sustainability of the business.

- **Example 1: High Greenwashing risk score.**

If an entrepreneur uses lots of green features in its communication (thus have a big score e.g. 60), and its environmental positioning is categorized as B (B: Outside of the core business, coefficient: x1.24), then the B coefficient will increase even more its final scoring to penalize the disproportionate utilization of green features relatively to the actual sustainability of its value chain Total score: 60x1.24=74.4 points → High risk of greenwashing.

- **Example 2: Low Greenwashing risk score.**

If an entrepreneur uses almost no green features in its communication (thus have a low score in the description part, e.g. 10), and its environmental positioning is assessed as A (A: No environmental features, coefficient: x1.538) then the A coefficient will multiply the score but the final scoring will still be low, which would illustrate the poor risk of greenwashing. Total score: 10x1.538=15.38 points. Similarly, if an entrepreneur uses lots of green features in its communication (thus have an high score in the green features part, e.g.: 60), and its environmental positioning is assessed as E (E: Green Business, coefficient: x0.308), the total scoring would be: Total score: 60x1.538=18.48.

The two cases end up with similar total scoring since they share environmental information balanced with the true sustainable level of their projects.

Limits: The choice of the environmental positioning of the company is based upon the statement of the entrepreneurs on the whole value chain and the common knowledge about industries. Thus, the first issue that can arise is dishonesty and hidden facts from the entrepreneurs. The second issue regards the likelihood that a project is more sustainable than what is written on the description but because the

standards of positive impact communication are not still anchored on crowdfunding platforms, the entrepreneur has not shared information about it.

Table 18: Greenwashing risk score criterions: environmental positioning of the company.

Data	Criteria	Points allocation rules	Coefficients	Scoring
CAMPAIGN PAGE	What is the true environmental positioning of the company ?	Estimate the environmental positioning of the business by looking at the weight of green feature embodied relatively to the whole value chain of the product (including manufacturing, consumption and recycling). **Allocate the letter A, B, C, D or E** based on the category to which the business is in. **Details of each category:**		
		A) No environmental feature: from raw material to waste disposal, the value chain doesn't include green process.	1.54	
		B) Outside the core business: from raw material to waste disposal, the value chain doesn't include green process but the company donates a part of the revenue to charities or externalizes some of its activities to environmental structure (e.g purchase of recycled plastics) or is part of an industry that is greener by nature without having building sustainable value chain at the company level. → e.g : online signing app (industry: reduce papers but the company has not study the pollution it is emitting by saving data online etc...)	1.23	
		C) Minor part of the business: < 50% of the value chain is structured to be sustainable.	0.92	
		D) Major part of the business: > 50% of of the value chain is structured to be sustainable.	0.62	
		E) Green business : the whole value chain is structured to be sustainable.	0.31	

Source: Authors' creation

- **Item(s) not included in the scoring:**

Label: label is a very interesting item that helps track greenwashing (Zaman and al., 2010). If an entrepreneur is granted a well-known green label, it is most likely an evidence that some green features are justified. On the contrary, if an entrepreneur builds home-made labels to enhance its own products it would also be a great signal that the entrepreneur misleads investors. Yet, this study has not the mean to detect the existence of one label and to check if the entrepreneur has truly been granted the said label. Because it would have a huge impact on the score, we choose not to include it. Yet, labels are included in the items that we check to assess the fair level of information. More points will be given if no explanation or contextualization are given.

Part 2: Greenwashing risk score applications on crowdfunding success.

Thanks to the Greenwashing risk scores obtained, this study explores 3 dimensions of greenwashing on crowdfunding platforms. First, this study produces and comments the distribution of the GWS obtained as a whole, and then based on their sizes, categories, locations, and goals. Especially, this study formulates an answer to hypothesis 5 (H5) investigating the relationship between projects using green features and the risk they use greenwashing, and to hypothesis 6 (H6) examining the relationship between the time and the evolution of greenwashing score in a defined sector. Results shared in this study can only be considered as an initial draft of what should become a larger investigation since the size of the sample is too small to draw firm conclusions (219 projects).

Second, this study explores whether greenwashing can be a determinant of success in a fundraising campaign. To test hypothesis 7 (H7), the GWS variable is added to other variables selected for their potential explanatory power on the success of a crowdfunding campaign according to the previous litterature (see Literature review/Hypothesis) in the following multiple linear regression model:

(7) $PledgebyGoal = \beta_0 + \beta_1 LogGoal + \beta_2 US + \beta_3 FundingPeriod + \beta_4 Updates + \beta_5 Video + \beta_6 Wordcount + \beta_7 Rewards + \beta_8 Endorsement + \beta_9 Gender + \beta_{10} Pofit + \beta_{11} GreenwashingRiskScore + u_i$

where the constant term is β_0, the dependent variable is the variable *PledgeByGoal*, and u_i is the normally distributed error term. Based on the Bento and al. (2019) model, this study assesses the determinants of success of crowdfunding projects based on 3 categories of variables: i) descriptive characteristics of the projects (LogGoal, US; Profit) ii) degree of preparedness of the projects (Updates; Rewards; Video) iii) descriptive characteristics of the entrepreneurs (Gender). This study keeps the three categories adding some variables in each of them and including a fourth category, the GWS. Below are listed the updated categories (see Table 19).

Table 19: Synthesis-table of the variables used in the crowdfunding success model.

Categories	Variables	
	Old	New
Projects descriptive characteristics.	LogGoal, US, Profit.	Funding Period.
Degree of preparedness.	Updates; Rewards; Video.	Wordcount, Endorsement.
Entrepreneurs descriptive characteristics.	Gender.	
Greenwashing Risk score.		GWS.

Source: Authors' creation

Since our goal is to study to what extent the GWS is a determinant of success in crowdfunding campaigns, all the other variables were inputted in order to have the more accurate model of success as possible. Thus, old variables have proven their predictive power in the previous studies. To respect standards in the research field about crowdfunding, the Natural logarithm of the Goal *(LogGoal)* is used as a control variable (e.g. Mollick, 2014; Cordova and al., 2015; Kuppuswamy and Bayus, 2017). Even though scholars find little predictive power in the locations projects since crowdfunding is a fintech that

facilitate investment from all over the world (Agrawal and al., 2011; Kuppuswamy and Bayus, 2017). the choice was made to have *US* as a control variable as well. In line with Bento and al. (2019), the major part of the sample is composed of US-based projects (59%) and the location can influence the way greenwashing is produced and defined. Regarding the other descriptive variables, Funding period was included following the study of Schiller and al. (2014), since the length of the fundraising campaign chosen by the entrepreneur can pass a signal to investors and thus impact the success of the capital call. *Profit*, a dummy variable that take the value of 1 if the entrepreneur committed to give a part of its revenue to a charity in his pitch, matters in the success (Bento and al., 2019). The degree of preparedness reflects the commitment of the entrepreneur to his project and can boost the enthusiasm of potential investors (Cardon and al., 2009). Degree of preparedness is evaluated thanks to 5 variables: *Updates* and *Comments* shows whether the entrepreneur try to keep its community updated, signaling trust and reliability. *Video, Rewards, Wordcount*, indicate whether the team took time to draft their pitch showing signs of a possibly committed team. *Endorsement* shows which sponsors support the entrepreneur and indirectly what kind of sponsors the entrepreneur is willing to accept. This information is valuable since values endorsed by sustainable projects is a huge driver of success in sustainable crowdfunding. The variable *Gender* is instructive since scholars show that the presence of women in the funding team can highly improve the likelihood of success of one project (Frydrych and al., 2014; Bento and al., 2019). For the appraisal of the first hypothesis, the variable Greenwashing is added to the multiple linear regression model (7).

Likewise, the dummy variable *Ongoing* measures the success of the projects' post-campaign development. The final objective is to figure out whether greenwashing campaigns push technological ventures toward failure (H8). Variables were inputted in the model based on the framework of Bento and al. (2019) adding variable based on previous academic litterature and finally, the GWS to test hypothesis 8. Below are listed the updated categories (Table 20).

Table 20: Synthesis-table of the variables used in the post-campaign development model.

Categories	Variables	
	Old	New
Projects descriptive characteristics.	PledgebyGoal, Pledge, US, Profit.	Funding Period, Endorsement, New Backers.
Degree of preparedness.	Updates; Rewards.	Wordcount, Video, Comments.
Entrepreneurs descriptive characteristics.	Gender.	
Greenwashing Risk score.		GWS.

Source: Authors' creation

H8 is tested through the following multiple linear regression model:

(8) $Ongoing = \beta_0 + \beta_1 Pledge + \beta_2 PledgebyGoal + \beta_3 US + \beta 4 Funding\ Period + \beta_5\ New\ backers + \beta_6 Updates + \beta_7 Video + \beta_8 Wordcount + \beta_9 Rewards + \beta_{10} Comments + \beta_{11} Endorsement + \beta_{12} Gender + \beta_{13} Profit + \beta_{14}\, GWS + u_i$

where the constant term is β_0, the dependent variable is the binary variable *Ongoing*, and u_i the normally distributed error term. The variable *US, Wordcount, Endorsement, Profit, Gender Pledge* have been inputted with the similar intuition relative to the first regression model. The choice of adding the variable *Pledge* is in line with Bento and al, (2019). *New Backers* is a new input in the model: this variable could have a predictive power since new backers had an additional motivation to support the project compared to existing backers; even though they had more barriers to invest they did it all the same. Consequently, this behavior during the fundraising campaign can be an indicator of a higher interest for the product than existing backers who possibly invest for diversification purposes. For the appraisal of the hypothesis 8 (H8), the variable *GWS* is inserted into the multiple linear regression model (8).

A warning must be shared relatively to the size of the sample. Data are collected manually, and the timeframe of this study had made impossible to collect data from a sufficient number of projects so to have a majority of significant results. Consequently, results obtained in this study give some hints about greenwashing on crowdfunding but a larger study with data extractor software should be conducted to obtain statistically significant results for most of the variables and confirm these insights.

DATA

The empirical analysis focuses on a dataset of 219 projects from 2016 to 2019 by self-declared sustainable entrepreneurs drawn from the crowdfunding platform, Kickstarter. The choice of the world-leading crowdfunding platform is based upon the availability of all the data of the projects ever created since Kickstarter's creation (2009), including the years of interest of this study (from 2016 to 2019). Moreover, Kickstarter provides filters by years, product categories and key words through a search bar, an essential tool to capture candidates for greenwashing. In addition, crowdfunding scholars commonly run their study on Kickstarter (e.g. Etter and al., 2013; Lin and al., 2014; Mollick and al., 2014; Bento and al., 2019). All the projects online pages on Kickstarter have been saved in PDF files on the April 21st 2020 to avoid updates during the conduct of the study and preserve consistency. In order to capture the relevant data from the platform, the following filters were applied: "Technology"; "On Earth"; "Successful projects" and specific green words were specified in the search bar to select projects that would be more likely to present either a sustainable business or a greenwashed communication.

- **From 05/15/2016 to 05/15/2019:** The sample only includes projects having at least one year of existence so that post-campaign development can be analyzed in the second part of the study. Moreover, only ended campaigns were analyzed to avoid the COVID-crisis bias where the crowdfunding industry may suffer from unusual trends.
- **Technology:** To better assess the impact of greenwashing, the study focuses exclusively on technological projects. The choice of this category is explained by several reasons. First, technological projects are more likely to convert in ventures in the years following the fundraising which is of importance to study the impact of greenwashing on post-campaign projects development. Second, technological projects are at the heart of Kickstarter history, targeting thirty years old, technology aficionados, and are consequently more likely to be subject to greenwashing since that segment of population is also the one giving the more importance to sustainability.
- **Successful projects**: Only successful fundraisings were analyzed. The multiple *Pledge amount/Funding Goal* has been used to study the impact of greenwashing on campaign's performances. No need to include failed projects since greenwashing used on failed projects are not financially threatening investors as part of an "All or Nothing" crowdfunding platform where the entrepreneur gives back the money if the threshold is no reached.
- **Green words:** Kickstarter's search bar seeks for keywords in the tittle and short pitch description of the projects. The choice of the words inserted in the search bar below aimed at catching projects that were the more likely to use green words in their title or short pitch description and thus would be more likely to present either a sustainable business or a greenwashed communication. Words have been selected on the basis of existing literature about greenwashing and green words.

Filtering words used: "Alternative"; "Biodegradable"; "Carbons"; "Chemicals"; "Clean"; "Climate change"; "CO2"; "Contamination"; "Eco friendly"; "Ecological"; "Electrical"; "Emissions"; "Energy"; "Energy efficient"; "Energy Saving"; "Environmental"; "Green"; "Nature"; "Organic"; "Planet"; "Plastic"; "Pollution"; "Recycled"; "Renewables"; "Reusable"; "Solar"; "Sustainability"; "Upcycle"; "Waste"; "; "Zero".

- **On Earth:** Projects from all over the word were extracted to increase the number of projects for each green word's filter to generate more robust outputs.

Projects were sorted "By End Date" to randomize the sample since Kickstarter uses an algorithm by default (named "magic") without sharing its ordering criterions. The use of this algorithm would have created a significant bias in the study. Projects were first filtered by green words and then by End Date. For example, all the projects referring to "eco-friendly" between 2016-2019 were extracted and the same process was applied to all the green words' filters previously listed to respect randomization of the sample. The above filters were applied on the 486,314 projects of the crowdfunding platforms Kickstarter at the moment of data collection. One-time projects, i.e. projects that are collecting funds for one operation and plan to stop their activity thereafter, were withdrawn from the sample because one aspect of the study concerns the post-campaign development.

The greenwashing score grid has been filled exclusively with data coming from Kickstarter. To compute the current and future success analysis, the following data were drawn from Kickstarter: *Pledge*, *Goal* (computed into *LogGoal* for normalization necessity), *Total backers*, *New backers*, *Funding Period, Video, Comments, Updates, Wordcoun*t, Category of project, *Location* (country, region, city), *Rewards, Endorsement, Profit, Gender*. The Greenwashing risk score grid has been filled thanks to the extraction of the following data from Kickstarter: Share of green/blue colors on illustrations, Share of natural items on illustrations, Green words in the title of the product, Green words in the short pitch description, Green words in the description of the project, Completion of environmental commitments options, Quantity and quality of environmental claims, Environmental positioning of the company. Facebook friends were extracted from the founders' Facebook profile.

The *Ongoing* dummy variable aims at assessing whether the venture has succeeded in its post-campaign development. Post-campaign development success is attributed through the screening of the project's website and its Facebook page seeking for the last update. If the last update of the project's website happened in 2019 at least, or if there is still the possibility to fill a purchasing order, the project is considered as ongoing. If the last update of the project's Facebook page happened in 2019 at least, the project is considered as ongoing. Thus, if one of the previous conditions is satisfied, the venture is

considered as still active on the market and took the value of 1. Otherwise, *Ongoing* takes the value of 0. Table 22 synthetizes and defines all the variables used in this study to compute linear regressions.

Hereafter are the main information given by the analysis of our sample. The sample of this study is composed of a majority share of US-based projects (59%) which is a high percentage but still consistent since Kickstarter is a US-based platform. Each of the 89 non-US country comprise in the sample represents on average 15 projects (see Appendix 6, Table 3 (A,B)). Most of the projects are categorized as "Gadgets" (30%) or "Technology" (25%) by their founders (see Appendix 6, Table 4). Over the 30 filtering words used, the two words providing the most projects are "Solar" (17.81%) and "Electrical" (20.09%) which make sense since technological projects related to sustainability are often closely or remotely related to renewable energies (see Appendix 6, Table 6). Even if all the projects over the full years for each filtering words (except 2019: data on 6 months only) were taken, there is all the same a disparity between the number of projects extracted by years : 2016 (30%), 2017 (42%), 2018 (21%), 2019 (7%). More details about the composition of the sample is available on Appendix 6 (see Table 3 – 5).

Table 21 presents the descriptive statistics of the variables used in this study (see Table 21 for a synthesis-table of the variables). The descriptive statistics computed outline some key facts that enable to better understand the characteristics of the projects composing the sample. First, one can observe that the *Funding perio*d is range from 4 days to 2 months and that on average, 33% of investors are *New Backers* which means that communication is very important to convince web users to make their first investment. Regarding the content of the project description, the sample is characterized by extreme differences in numbers between the projects (e.*g. Comment*s: x4,404; *Wordcounts:* x24,409; …). Including a video in its pitch seems to become a new standard (98%). Second, one can have some hint about the future results of this study by looking at the two futures dependent variable of the regressions: *PledgebyGoa*l variable shows that some variable was significantly overfunded (x70); *Ongoing* variable shows that 98% of the projects were still active at least 1 year after the end of their crowdfunding campaign. This is consistent with the previous literature (70%, Bento and al, 2019). Other fact of importance relates to the *Facebook friends* variable that has been eliminated due to a lack of available data (90 out of 219 entrepreneurs' Facebook friends only have been successfully extracted). Finally, only a minimal number of projects promised to give part of their proceeds to a charity. The Greenwashing risk score provides project scoring from 2.69 to 83 which is consistent with the objective of the GWS (See Results).

Table 21: Descriptive statistics of the variables.

Variables	Count	Mean	Median	Min	Max
Backers	219	694	208	1	28 138
Pledged amount	219	135 843	51 014	20	1 823 227
Updates	219	16	15	0	52
Comments	219	290	74	0	4 404
New backers	219	172	56	0	6 457
Video	219	0.98	1	0	1
Goal	219	35 539	20 000	20	700 000
PledgebyGoal	219	4	2	0	70
US	219	0.59	1	0	1
Rewards	219	10	9	1	27
Funding Period	219	36	31	4	60
Endorsement	219	6	0	0	81
Profit	219	0.01	0	0	1
Gender	219	0.13	0	0	1
Fbf	219	701	604	0	2 133
Wordcount	219	830	673	76	24 845
Wordcount (without pictures)	219	696	547	30	24 845
Wordcount (pictures only)	219	134	88	0	1 100
Ongoing	219	0.68	1	0	1

Source: Authors' computations.

Table 22: Description of the variables.

Name	Description
Backers	The number of individuals that contributed to the project.
Pledge	The amount of $US that the campaign raised.
Updates	The number of updates made by the founding team of the project.
Comments	The number of comments made by Kickstarter users (backers or potential backers). This enables users to ask questions or show involvement.
Newbackers	Indicates the number of first time contributors relative to the number of backers who previously backed other projects on Kickstarter (in %).
Video	Dummy variable indicating whether the campaign includes a video. The value is one in case a video is included, and zero otherwise.
Goal	The amount of $US that the campaign seeks to raise. Since the founders will only receive the funds if the goal is reached, the choice of this number is crucial.
PledgebyGoal	The percentage of the goal that is reached. From 100% onwards, the campaign was successful and the founders receive the total amount pledged. If the variable is below 100%, the founders could not draw any funds.
US	Dummy variable indicating whether the campaign is located in the US or not.
City, State	Geographical situation of the entrepreneur. Format: if US project "City, State", otherwise "City, country".
State / country	Geographical situation of the entrepreneur. Format: if US project: "State", otherwise "Country".
Rewards	The number of different rewards offered in return for the contribution of potential backers.
Funding Period	The length of the campaign in days. Backers can only pledge during this timeframe.
Endorsement	The number of endorsements by the media mentioned in the campaign description. Here, all printed, television, or online media are considered relevant. Comments by users on social platforms or crowed-sourced review websites like Yelp were not consider relevant for this variable.
Profit	A dummy variable indicating whether the campaign is promoting that the venture will use at least a part of their profit for a charitable cause. This could include giving a certain percentage to charity, being a non-profit organisation or actions like planting a tree for every item sold. The value is one if at least a part of the profit is used for a charitable cause, and zero otherwise.
Gender	Dummy variable indicating whether the founder is female. The value is one if the founder is female.
Fbf	The number of the founder's connections on the social network Facebook, at the time of the data collection. Only the number of friends has been included (not the number of followers).
Wordcount	Number of words in project description (including pictures, except "Rewards / Timeline" parts)
Wordcount (pictures excluded)	Number of words in project description without words written on pictures.
Wordcount (pictures included)	Number of words in project description that are on pictures (except "Rewards / Timeline" parts)
Ongoing	Dummy variable that iIndicates whether the venture is still operational at the time of data collection. This variable takes a value of one if the venture is still active, and zero otherwise.
Greenwashing risk score (GWS)	Number from 0 to 100 indicating the riskiness of one project to use greenwashing. This number is based on the Greenwashing score methodology.

Source: Authors' computations.

RESULTS

Exploring greenwashing risk on crowdfunding platforms.

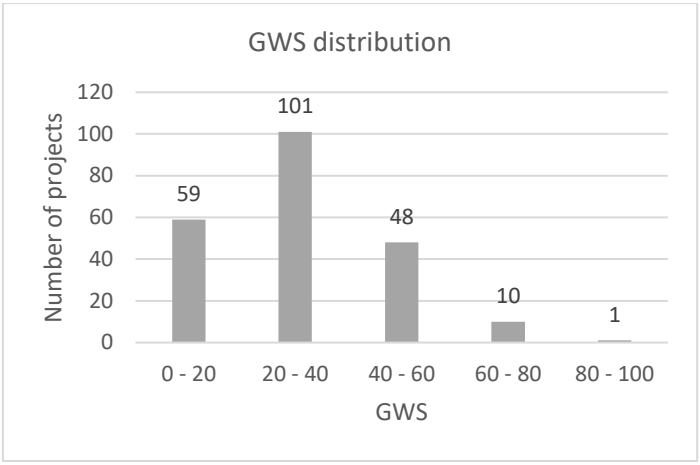
To explore the risk coming from entrepreneurs to greenwash their fundraising campaign to boost their performance, this study designed a home-made methodology dedicated to track greenwashing on crowdfunding platforms. Our methodology is based on the comparison between the quantity and quality of green features used in the pitch of the project relatively to its environmental positioning at project-level. Hypothesis were formulated (see Table 2) by analyzing existing methodologies and the constraints brought by the specificities of crowdfunding platforms (through the example of Kickstarter). From such hypothesis resulted the creation of a methodology tailored to reward-based crowdfunding (see Methodology, Part 1). Since greenwashing does not obey to a fixed definition, it would be hard to rigorously determinate whether the methodology provided by this study is better than another existing one. Either way, it provides a more suitable tool for crowdfunding platforms. Once applied to projects included in the sample (see Data), our model generates a well-diversified distribution of Greenwashing risk scoring. It is surely not enough to say that the GWS is a sound tool, but it shows that the model relies on true differences between projects giving way to instructive insights about greenwashing trends on crowdfunding platforms. Trough the run of the GWS model, the study provides a discussion about hypothesis 5 (H5) and 6 (H6) investigating the relationship between projects using green features and their risk of being greenwashing, and the relationship between the time and the evolution of greenwashing score in a defined sector, respectively. To have more informative data, the diverse thresholds were set up to display a distribution between categories:

Table 23: Greenwashing risk score distribution.

GWS	Risk of greenwashing	Distribution (%)
0 - 20	Small	27%
20 - 40	Medium	46%
40 - 60	Large	22%
> 60	High	4.6%

Source: Authors' creation

Figure 19: The greenwashing risk score distribution (%).



Source: Authors' creation

Among our sample, 27% of the projects bear only a small risk of greenwashing (see Table 23). Those projects include either projects having planned a sustainable value chain (e.g re-used raw materials, mitigation of the carbon footprint, eco-mobility used for distribution, waste and water management, …) promoting it through a proportionate quantity of qualitative; or projects without any green features but making no environmental claims either. An illustration of the first case is apparent through the project called "REFLOW", a business using plastic waste to create quality filament for 3D printings. In this case, the entrepreneur uses the following green features to introduce the project (qualitative assessment is specified between brackets): green words (in the Title and the pitch), environmental claims (not fully sustained by consistent figures and specifics terms but are not too complex and the impact measurement process is stated). As a result, points granted to the quantity and quality part of the score grid are quite high. Yet, the full value chain of the project is built to be the more sustainable possible (plastic waste collection, recycled packaging, open-source extruder, investment in local plants and local waste collectors). As a result, the few points summed up because of the use of green features are reduced by the coefficient of a "E: Green value chain" (x0.31) and reach a low score to reflect a small risk of greenwashing. On the contrary, the project "Slide: smart curtains, made simple" has been selected in the sample thanks to the filter "Nature". The project uses some illustrations and words that could be related to the idea of greenness but is not sharing any environmental claims. Even if the project is classified as "A: No environmental features" (Coefficient x1.54), the score remains low because they were almost no green features. In the 0-20 (Small risk) category, most of the project correspond to the first case: a balanced proportion between green features and the quality/quantity of the communication made. Projects without any environmental characteristics are rare since the sample was filtered on green words filtering.

Medium risk of greenwashing concerns 46% of the projects analyzed (see Table 23). This range is comprised of a great diversity of products (electrical bike, air sanitizers, energy savings software, organic products …). Those projects advanced some environmental claims but without providing qualitative data to sustain such argumentation or only providing evidence of the main argument veracity. Some of them provide information about their individual actions without connecting it to a global issue. Consequently, the medium risk is based on the fact to distinguish if this lack of information is because of inconsistent environmental claims or because impact measurement is not yet a standard on crowdfunding platforms and especially not suitable to measure young ventures' extra-financial performance.

Among our sample, 22% of the projects assessed present large risk of greenwashing (see Table 23). This category often includes projects that introduce themselves in the light of one environmental claim that is not sustained by reliable information. They most often established a sustainable process in only in one aspect of the project (often at the product-level through energy savings) without managing the other part of the value chain through eco-distribution, end of life management or shared usage for example. Alternatively, they position their business as a solution to a bigger problem without explaining or measuring to what extent they can contribute or progress to contribute to it. As a result, it is hard for the investor to check the veracity of such claim and to know whether the entrepreneur planned an healthy development on the whole value chain without stating anything about it or if it is not the case.

Finally**,** 4.6% of the projects signalize a high risk of greenwashing (GWS >60) (see Table 23). Amongst the 11 projects out of the 219 includes in the sample, most of them have actually no environmental features, or worse, produce negative externalities but uses lots of green words and blanket terms to sound green, probably to attract investors. For example, the MIRAMIR – New social ecosystem for change describes its business as "*A new alternative social ecosystem and portal to unite those who care about our planet and future as a human race*". As we can see solely with the title of the product, and can be extended to the whole pitch description, lots of blankets terms, vague information with no figures nor standards of the industry to better understand the value creation of the project are used.

Table 24: Greenwashing risk score by product category.

	Categories	Count	Categories	Mean	Categories	Median	Categories	Min	Categories	Max
1	3D printing	9	Gadgets	50.630	Gadgets	55.385	Flight	47.692	Web	83.440
2	Apps	1	Flight	47.692	Technology	48.321	Apps	45.987	Gadgets	77.244
3	DIY Electronics	8	Web	46.448	Flight	47.692	Robots	33.211	Wearables	67.138
4	Fabrication Tools	3	Apps	45.987	Apps	45.987	Web	31.215	Technology	57.051
5	Flight	1	Technology	42.484	Wearables	42.506	Space Exploratior	23.515	DIY Electronics	54.123
6	Gadgets	66	Robots	39.714	Web	41.646	Technology	19.215	Makerspaces	50.231
7	Hardware	52	Wearables	39.218	Robots	36.445	Sound	15.980	Robots	49.484
8	Makerspaces	2	Makerspaces	32.238	Makerspaces	32.238	Software	14.885	Flight	47.692
9	Robots	3	DIY Electronics	31.669	Space Exploratior	30.327	Gadgets	14.782	Hardware	47.038
10	Software	2	Space Exploratior	30.327	DIY Electronics	27.798	Makerspaces	14.246	Apps	45.987
11	Sound	3	Hardware	27.718	Hardware	27.210	Fabrication Tools	13.462	Fabrication Tools	40.132
12	Space Exploratior	2	Fabrication Tools	26.643	Fabrication Tools	26.336	DIY Electronics	13.419	3D printing	37.884
13	Technology	55	Sound	24.500	Sound	21.545	Hardware	13.252	Space Exploratior	37.140
14	Wearables	6	3D printing	21.361	Software	19.417	3D printing	11.442	Sound	35.973
15	Web	6	Software	19.417	3D printing	17.731	Wearables	8.360	Software	23.950

Source: Authors' computations.

Our results also provide information about the risk of greenwashing between products categories in Kickstarter's category named "Technology" (see Table 24). Web (e.g. websites platforms), Gadgets (e.g. solar panels), Wearables (e.g. solar watch) offer the maximum values. Web and Gadgets are also the two categories with the highest average values, respectively 50.63% and 47.692%. Those results suggest that entrepreneur targeting restricted investors (through platforms that target massive traffic or gadgets) are more likely to use greenwashing to attract customers. In the same vein, the most technical the project is, the smaller the GWS. Categories having the lower GWS are the following: Hardware (e.g. eco-mobility), 3D printings and Wearables. Wearables result is not consistent since there are only two projects in that category. It suggests that technical projects do not see the utility of using greenwashing since investors interested by those kinds of project are tech aficionados who would not be significantly more interested if the venture embodies a sustainable value chain.

Table 25: Greenwashing risk score by goal.

Goal	Count	Mean	Median	Min	Max
< 1 000	14	29.518	26.067	8.360	59.366
1 000 -10 000	68	30.530	27.638	2.985	77.244
10 0000 - 100 000	132	32.162	28.202	2.690	83.440
100 000 - 1M	5	34.390	33.978	28.381	40.236

Source: Authors' computations.

No clear conclusions can be drawn regarding the relationship between the (Log) goals of the calls and the risk of greenwashing (see Table 25). Projects choosing a lower goal size seems to be less willing to use greenwashing, maybe because they do not need to attract lots of people to reach their target and thus do not need to lie to their consumers.

Table 26: Greenwashing risk score by countries.

Location	Count	Mean	Median	Min	Max
Non-US	89	30.566	27.478	2.690	30.566
US	130	33.513	31.215	2.985	77.244

Source: Authors' computations.

Similarly, there is no striking evidence of difference between projects located in the United-States and in the rest of the world (see Table 26). A slightly higher likelihood to use greenwashing in the United States relatively to the rest of the world would be interesting to validate with a bigger sample. Cultural difference between the conception of eco-friendliness can also explain it.

Table 27: Greenwashing risk score by environmental positioning.

Environmental positioning	Count	%	GWS (average)
A	22	10%	33.32
B	77	35%	35.55
C	78	36%	32.22
D	36	16%	23.40
E	6	3%	13.38
Total	219	100%	31.54

Source: Authors' computations.

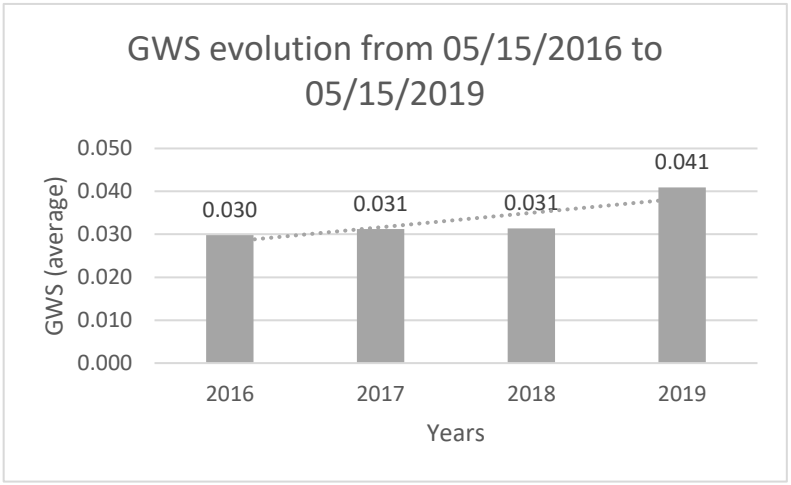
Finally, corporations are sorted based on their environmental positioning (i.e. their sustainability commitment regarding their entire value chain). The vast majority of the sample is divided between categories B and C (see Table 27). Those figures show that the majority of crowdfunding ventures implement positive initiatives in only one aspect of their business. It seems that founders do not consider corporate sustainability at corporate-level but only at product-level. Besides, lots of entrepreneurs position themselves in sustainability by outsourcing their positive initiatives (e.g carbon emissions compensation by donations to charities that will plant trees) or position themselves in a sustainable sector without going further in the supply chain (e.g a business manufacturing solar panels without integrating reused materials, recycling options, or another positive impact initiative …).

Thanks to our results, the study put the shed on some blatant difference in terms of the quantity and quality of environmental claims compared to the environmental positioning of the product, notably product categories and distribution of the GWS. Consequently, one cannot affirm that there is no greenwashing on crowdfunding platform. The Greenwashing risk score methodology advocates for the

presence of greenwashing on crowdfunding platforms based on the results reported above. Hypothesis 5 is validated.

In addition, the GWS reports an increasing use of greenwashing through our sample composed of technological projects on the reward-based crowdfunding platform Kickstarter (see Table 28, Figure 20), that have been selected using at least one green word (see Appendix 8). The growth was steady until 2018, accelerating from there. As a result, the GWS confirms hypothesis 6.

Figure 20: Greenwashing risk score increases across time.



Source: Authors' computations.

Table 28: Greenwashing risk score increases across time.

Years	Count	Mean	Median	Min	Max
2019	16	40.908	43.711	14.782	77.244
2018	47	31.393	27.478	2.985	67.590
2017	91	31.222	29.858	2.690	67.138
2016	65	29.776	27.798	7.999	83.440

Source: Authors' computations.

Greenwashing impact on crowdfunding campaigns success.

This section aims at investigating the impact of greenwashing on the success of crowdfunding campaigns. The analysis focuses on hypothesis 7 (H7, see Table 2).

The multiple linear regression shows that the use of greenwashing in the project description boosts the performance of crowdfunding campaign. The variables *US* and *LogGoal* are used as control variables. The results of the regressions are presented in Table 29. Standard errors are indicated in parenthesis.

The control variable *LogGoal* matches with previous academic literature suggesting that the higher the goal to reach chosen by the funder, the less likely the campaign is to be overfunded. The control variable *US* suggests that the choice to take US as input makes sense since the coefficient is significant at a 1% level and shows that a US-based project has more chance to perform than a project located outside the United States. Regarding other projects' descriptive characteristics: the duration *(Funding Period)* of the crowdfunding campaign boosts the performance of the call. The commitment from entrepreneurs to donate part of their proceeds to charities *(Profit)* significantly boosts the performance of their campaigns (Coefficient x11). Such involvement gives altruistic values to the project holder, values that are driving the sustainable investment (Burtch and al., 2013).

To confirm the influence of the degree of preparedness on the success of a crowdfunding campaign, the same variables than Bento and al. (2019) model are inputted: *Updates, Video, Rewards*. Other variables that can signal commitment from the management team were added to this category to test whether they participate to bring out more explanations on crowdfunding success. No clear conclusions can be drawn from those variables about quality signals: some boost performance other reduce it. Either case, the following interpretations provide instructive insights. The more updates are posted by the management team on the campaign page, the more money is invested. On the contrary, the more rewards, words and video composed the pitch of the campaign, the less likely the entrepreneur is to succeed. The variables *Rewards* and *Video* give contradictory outcomes with Bento and al. (2019). Since *Video* is not significant at a 10% level and 98% of the campaigns includes a video, our study considers that the general result should be positive and is due to a specificity of our sample. Negative sign of *Rewards* can mean that products differentiation does not matter in technological projects that are using green words on Kickstarter. Indeed, investors in such projects want to invest in a stable and resistant technology and can fear that the proposal of multiple rewards hide a lower quality through the cheapest reward. Besides, the number of words contained in the pitch (including words on pictures) can be the sign of a lack of quality if too high. If an entrepreneur is not concise enough, it could reveal that no specific text has been drafted for Kickstarter. As a matter of facts, it would be expected that a special content for Kickstarter would be web oriented resulting in short and appealing communications. Finally, the negative sign of the variable *Endorsement* suggests that potential backers do not trust sponsor claims. Thus, the more sponsorship appear on the page, the less people are willing to invest. On another note, in line with Bento and al. (2019), the gender of the funder matters: a woman is more likely to be overfunded than a man.

The variables interpreted above contribute to elucidate the drivers of crowdfunding success. The finality of equation (H7) is to test the effect of greenwashing on the success of a crowdfunding campaign. By

adding the *Greenwashing risk score* variable to the robust basis of crowdfunding success determinants derived from previous litterature, this study figures out to what extent a high GWS increase the amount of money collected by entrepreneurs. Results suggest that a high risk of greenwashing is positively correlated with the performance of a crowdfunding campaign. Because the coefficient is not statistically significant at a 10% level, no firm conclusions can be drawn regarding whether hypothesis 7 is confirmed, but the insight provided by this study is consistent with common sense. Indeed, if greenwashing were not boosting campaigns performance, no entrepreneurs would use it unless they were unaware of a subtle negative impact. The same analysis ran through a bigger sample would probably lead to confirm hypothesis 7. As a result, Kickstarter's viewers are likely to be misled by green features used in the pitches, mistakenly believing that projects embody the said environmental features. In other words, a specific type of scam is spreading across crowdfunding platforms: greenwashing.

Table 29: Regression results of crowdfunding success.

	(1)
	Success
LogGoal	-0.292
	(0.397)
US	2.697***
	(0.971)
Funding Period	0.177***
	(0.05)
Updates	0.173***
	(0.05)
Video	-0.01
	(3.72)
Wordcount	-0.01
	(0.001)
Rewards	-0.117
	(0.103)
Endorsement	-0.055
	(0.05)
Gender	0.409
	(1.433)
Profit	11.397***
	(4.07)
GreenwashingScore	0.002
	(0.03)
Constant	-2.114
	(4.32)
Observations	219
R2 (adjusted)	0.147

This table shows multiple linear regression results for Success as dependent variable. Standard errors are shown in parentheses.
*** Indicates significance at 1%.

Source: Authors' computations.

Greenwashing and post-campaign development success.

This section aims at investigating the ability of greenwashing to influence the post campaign development of a venture having previously collected funds through greenwashing (results are presented in Table 30). The analysis focuses on hypothesis 8 (H8).

The variable *Pledge* indicates that the more money was invested through the crowdfunding campaign, the more likely the project is to be still active at least 1 year after the call. Yet, a high *PledgebyGoal* ratio reduces the chance to run a healthy venture post-campaign. It suggests that as long as the amount collected is close to the goal, the business is managed with due diligence. Conversely, if the amount collected exceed a certain threshold, the volume of rewards to produce can trouble the management of the supply chain (suppliers without sufficient production capacities, lack of raw materials, increase in storage costs, etc. …). Like crowdfunding campaign success, *US*-based ventures have more chance to survive over the years following the campaign. Since most investors on Kickstarter are American, and that crowdfunding has been proven to bring more than money to entrepreneurs, but also contacts with a community of customers, suppliers, media, … it makes sense that a US-based project is more likely to succeed in the future thanks to eased contact with local stakeholders. *Funding Period* reports that a longer duration does not contribute to the post-campaign development of the venture. Indeed, in reward-based crowdfunding where lots of projects are similar to pre-paid sales, the duration of a campaign can reflect consumers interests and market attractiveness. If the fundraising takes time, it signals that stakeholders are not fully convinced by the firm's offer, a bad omen for the future development of the business. The variable *New Backers* is added to the Bento and al. (2019) model to test whether the presence of numerous first-time investors is related to a successful post-campaign development. Our results report that the higher the share of new backers, the more successful the venture is likely to become on the mid-term. In the same line, investments from new backers can signal that the market is ready to welcome the project: they themselves believe enough in it to invest money even though new backers face more obstacles until reaching payment stage. In case of a high number of new backers, it can show that a huge share of word of mouths have been shared about this specific project and made people join Kickstarter to be part of the journey. It illustrates the ease with which an entrepreneur reaches and engages new customers. The degree of preparedness of the pitch can forestall the future of a business since it provides a proxy of the skills of the management team and gives an overview about their way to manage the business. The same variables as in the success regression are used, adding the number of *Comments* published by the backers since the campaign has been created. Results of the multiple linear regression about the degree of preparedness of the pitch do not give clear conclusions. More precisely, the inclusion of a *Video*, multiple *Endorsements*, and the number of words (*Wordcount*) in the campaign pitch and the publications of *Updates* about the project since it was created increases the likelihood of successful development of the projects. Yet, those coefficients are to be taken as insights since they are not statistically significant at a 10% level. On the opposite, the number of *Rewards* offered in exchange for investments in the project and the number of *Comments* published by investors since the campaign has been launched are negatively correlated with the performance of the business on the medium-term. Too many rewards can signal that the management team do not accurately forestall the impact of each

volume levels on their manufacturing capacities leading to delay in deliveries and financial imbalances amongst other things. It can signal future poor management to potential backers. Besides, Kickstarter's comments are allowed for backers only and still open after the campaign closed. The screening of projects with the higher number of comments reveals that a high number of comments often contains hundreds of complaints for delays in delivering or scams. A huge number of negative comments can indirectly impact the post-campaign development of projects since it threatens their brand image. While the variables positively correlated to the post-campaign health of a venture, they are not statistically significant, *Rewards* and *Comments* forecasting the failure of ventures post-campaign development are statistically significant at a 5% and 1% level, respectively. As a result, the degree of preparedness drivers indicates that pitch compositions contribute to success, revealing the deep skills and commitments of the management team. Yet, product differentiation should be carefully managed to avoid outburst from investors because of delays that would hurt the brand image. Moreover, while the number of women in the management team increases chances to be overfunded during the time of the call, the *Ongoing* regression reports that men (*Gender*) run projects that are more likely to survive in the years following the crowdfunding campaign. It can be explained by gender inequalities that give easier access to resources to men than women (loans, deals, …) that are vital to sustain the business development on the long run. In line with Bento and al. (2019), ventures committing to give part of their proceeds to charities are less likely to survive post-campaign (significance at a 1% level). If altruistic values are a powerful marketing tool, it should be carefully managed to be financially sound on the long run. The finality of the equation (8) is to test whether greenwashed communications during a crowdfunding call have an impact on the post-campaign development of a venture. Results suggest that the higher the greenwashing risk indicator, the less likely a project is to survive in the subsequent years. Greenwashing is a powerful marketing tool since there is an increasing pressure from consumers and investors to purchase green products and services. Yet, corporate communications based on lies can reveal the lack of competitive advantage from products and thus give signs of potential future ailing business models once joining the competitive market. Besides, people discovering the scam during or after the fundraising campaign can alert other potential consumers and threaten the brand image on the long run. Finally, the use of greenwashing can prevent backers from reiterating their purchase due to the signs of poor morality that such behaviors generate while values were their first investment selection criteria in sustainable ventures (Lehner, 2013). In the same line, such behaviors can reflect an inability to create long term relationships with stakeholders (consumers, investors, media etc. …) and thus made consumers apprehensive. Because the size of the sample was limited, results of the regression regarding the GWS are not significant and thus should be carefully taken as insights more than firm conclusions.

Table 30: Regression results of crowdfunding post-campaign development success.

	(1)
	Ongoing
Pledge	0.001
	(0.001)
PledgebyGoal	-0.002
	(0.002)
US	0.008
	(0.018)
Funding Period	-0.001
	(0.001)
New Backers	0.001
	(0.001)
Updates	0.002
	(0.001)
Video	0.005
	(0.065)
Wordcount	0.001
	(0.001)
Rewards	-0.004**
	(0.002)
Comments	-0.001***
	(0.001)
Endorsement	0.001
	(0.001)
Gender	-0.08
	0.026
Profit	-0.299***
	(0.076)
GWS	-0.001
	-0.001
Constant	1.052
	(0.069)
Observations	219
R2 (adjusted)	0.124

This table shows multiple linear regression results for Ongoing as dependent variable. Standard errors are shown in parentheses.
** Indicates significance at 5%.
*** Indicates significance at 1%.

Source: Authors' computations.

DISCUSSION

The current methodology aims at evaluating the impact of greenwashing on present and future success of the corporation that have been funded through reward-based crowdfunding. Since the proposed methodology is the first tailored to crowdfunding platforms, there is scope for improvement (see Recommendations).

One key point of the study to challenge is that the conception of greenwashing evolves over time and across countries. Sun and al. (2019) show that the wording attributed to eco-friendliness displayed through fashion magazines are drastically different from year to year. As a result, a unique standardized greenwashing risk scoring can hardly be considered consistent all around the world and for any period. Weights granted to each green feature in the GWS model should routinely be updated to illustrate the impact that each item has currently on the potential victims of greenwashing. Besides, all other items should be easily modified to reflect the current standards of greenwashing and impact measurement. For example, the list of green words should be regularly updated to remain consistent in tracking green words through pitches.

Another fundamental point related to the underlying definition of the greenwashing risk. On the one hand, the "*green*" part of *greenwashing* is considered as exclusive by some, only environmental initiatives are considered, whereas greenwashing is more largely defined by others; both social and environmental initiatives matter. On the other hand, the "*risk*" can be explored through two approaches. First, the risk can be considered as the quantity of greenwashing used i.e. that the more green features are used, the higher the Greenwashing risk score is since the GWS would here indicate that the project is very likely to use greenwashing in its communications. Second, risk can be considered as the quality of greenwashing used, and thus, as the likelihood for one investor to be misled. For example, subtle greenwash communication supports would be granted more points than a blatant one (greenwashing in volumes, typically lots of green illustrations and blanket terms related to eco friendliness).

The last point to highlight here is the mismatch between public awareness of greenwashing and impact measurement standardization. While scams regarding sustainability are becoming more and more known by both restricted investors and corporations, ways to mitigate greenwashing by measuring and promoting the true impact generated by organizations are still not widely spread. As a result, methodologies to detect greenwashing based on impact measurement are today useful to track the evolution of entrepreneurs' knowledge about impact measurement but cannot be used as a basis for a

Greenwashing risk score methodology. This is why one of our recommendations is to create a scoring that is based on the psychological orientation of the entrepreneur rather than impact measurement standards. Indeed, scams indicators in crowdfunding (and more largely in communication) outlined by the previous academic litterature can serve as a basis to define the likelihood for one entrepreneur to be a frauder or not. Combined to the volume of green features used, the psychological profile could give precious insights about the likelihood of one entrepreneur to use greenwashing that is fully disconnected from impact measurement knowledge. Such greenwashing risk scoring should be useful as long as there are not shared standards on impact measurement that fit start-ups business models. This situation is however not desirable for a longer period since it contributes to fuel the distrust from consumers towards the sustainable market and the crowdfunding industry. In that respect, some recommendations are addressed to authorities and crowdfunding platforms managers regarding their role in the fight against greenwashing (See Recommendations).

RECOMMENDATIONS

This study provides a methodology tailored to track greenwashing on crowdfunding platforms; the Greenwashing risk score (GWS). The scores of 219 projects on Kickstarter were collected to make a situational analysis of greenwashing on reward-based platforms and assess whether greenwashing has an impact on the success of a corporation during and after the fundraising campaign. Based on these results, this study provides recommendations to crowdfunding platforms managers, entrepreneurs, and governments to mitigate the negative impact of greenwashing on the trust of people about the sustainability and in fine, the slowdown of the ecological transition.

The role of governments and crowdfunding platforms in the expansion of greenwashing.

First of all, the regulation framework around greenwashing is still scarce and indirectly plays a role in the expansion of the greenwashing through advertisements and corporation's practices. Because of the lack of regulations, economic players have no other incentives than their good faith to release real information about their environmental positioning. The advertising industry benefits from few regulations against greenwashing and are mostly non-binding. More general laws can however advocate against greenwashing like the *Law against deceptive advertising*, article L. 121-1 of the French Consumers Code and article L. 121-2 from the same Code that requires advertisers to furnish evidence as to the accuracy of factual claims. Regulation framework is even more blurred regarding crowdfunding. The only requirements regarding corporation environmental reports concern large corporations that need to audit their figures (Grenelle law 2, article 225-L.225-102-1 of the French Commercial Code). For example, the norm ISO 26000 (see Appendix 11) provides lots of guidelines and best practices for environmental reporting purposes. While the label LUCIE has been created to reward companies that comply with the norm, it is non-binding. Besides, the responsibility to check the veracity of the information released in pitches of crowd founders is fully borne by backers even though they have no mean to properly check the data. In addition, backers can be victims of subtle greenwashing that use implicit means (colors, illustrations) to push the viewer into a predetermined direction. The impact of greenwashing is more than a deceived client, it significantly contributes to tarnish both the crowdfunding sector and sustainable market reputations. It is a pity since it represents a promising alternative channel of funding, especially for social entrepreneurs that struggle to find funds in standard channels (Cieply and al., 2016). Corporations are also affected by a general distrust since because people would not believe in positive impact initiatives anymore, corporations having a true sustainable business model would lose their competitive edge no matter what. Consequently, governments should legislate on greenwashing by creating binding legal and financial incentives for entrepreneurs. Doing so, they would avoid losing promising capital to fund the ecological transition and holding back sustainable ventures development. By designing an efficient regulation framework around greenwashing, countries would probably accelerate the ecological transition in creating conditions for the development of a

sustainable industry funded by significant amounts of private capital rather than the poor public resources.

The second recommendation provided by this study urges crowdfunding platforms managers to take responsibility in mitigating risk of greenwashing on their platform. This study shows that greenwashing most often targets restricted investors that do not have the capabilities to audit the environmental claims released by the entrepreneurs. Kickstarter should consequently require from project holders, as the French law requires in advertising, (Grenelle law 2, article 225-L.225-102-1 of the Commercial Code) to sustain their environmental claims with qualitative or certified information. It is important to note that Kickstarter is trying to encourage creators to be more mindful of the environment through the completion of their pitch on the platform. Since 2018, creators can optionally fill from 0 to 5 environmental commitments. Such initiatives are yet questionable since it can lead to the opposite effect than the one promoted by Kickstarter. Indeed, because these options are suggested to entrepreneurs when creating the communication supports of their campaigns, most of them will be incited to fill those options in a vague manner for multiple reasons. First, they could fear from losing competitive edge if leaving them empty no matter whether their business is sustainable. Second, even though entrepreneurs would embody true green features, if they do not have experience in impact measurement to properly report the positive impact generated, they are likely to produce greenwashing by using blanket terms and no proper methodology.

A key point is that greenwashing can appear within a crowdfunding campaign for two reasons. The first stem from the desire of entrepreneurs to boost the performance of their fundraising campaign as this study shows. Second, greenwashing can involuntarily be committed by entrepreneurs that do not realize the impact of their communication style. For example, one entrepreneur can use lots of illustrations with natural elements because he thinks that it is a sector standard (but is actually a sector afflicted by greenwashing). Similarly, a sustainable entrepreneur can list some environmental claims without releasing information to sustain the greenness of its business because he does not have the knowledge to measure his extra-financial impact or has not realized that environmental claims without justification look like greenwashing.

Consequently, Kickstarter could play an active role in the fight against greenwashing. First, the US leader crowdfunding platform should give more information to both creators and backers regarding the risk of greenwashing on crowdfunding platforms. A potentially good tool would be an algorithm that

provides a Greenwashing risk score to the creator when drafting his pitch description. In line with our methodology (GWS), such algorithm could spot environmental claims and automatically ask for more information to sustain the argument (e.g. where to find evidence, causal analysis scheme, in what timeframe the positive impact will be reached, figured metrics …). Besides, the said algorithm could estimate some green features like the percentage of green words, green color, natural items on illustrations, and send a warning to the creator of the page when the score exceeds a certain threshold. Thus, Kickstarter would avoid involuntarily greenwashing from unwarned entrepreneurs. In addition, if a determined threshold were exceeded, and the entrepreneur chose to submit the communication all the same, Kickstarter could display a warning on the campaign's page to alert potential backers against the risk of greenwashing. Conversely, a "anti-greenwashing" label could be displayed on the campaign's page if the project reaches a very low score. Kickstarter already uses algorithm without providing its criteria to detect "Environmental" projects. Yet, criterion used to select the projects are secret and no one can assess whether the "Environmental" tag is more or less protected from greenwashing. It would be more efficient to capitalize on these assets to develop a GWS providing transparent criterions to entrepreneurs and potential backers so that they can know which items were checked by the platform and which were not. In applying these recommendations, crowdfunding platforms like Kickstarter would have a significant impact on the sustainable economy. First, Kickstarter would promote sustainable entrepreneurship and give back their competitive advantage to truly sustainable ventures. Second, the brand image of Kickstarter and by extension the whole industry would be enhanced by demonstrating their involvement against scams and on the longer run would contribute to reduce the loss in confidence from web users toward the crowdfunding industry.

Another way to mitigate the risk of greenwashing can come from a combined work between governments and crowdfunding platforms. Governments could enhance the legislative framework around greenwashing and create statutes or certified label acknowledging the sustainability of corporations based on a mix of qualitative and quantitative criterions tailored for early-stage ventures. Crowdfunding platforms should then require that self-declared sustainable entrepreneurs to be granted such statutes to be labelled "Environmental" on their platforms. For example, the "social mission" (here, social mission includes both environmental and social orientation) can be required to be written in the Articles of association or specific additional agreements (such as ESUS in France) to be obtained (limited profit distribution, specific governance rules, wage gap …). When investing through equity-based platforms, specific clauses written in the shareholder agreement could be required from the platforms to recognize a sustainable venture (e.g. commitment of financial and extra-financial reporting, use of the fundraising to be exclusively dedicated to the maximization of the impact, exit clause if

substantial change in the social mission). The signature of an ESG Charter and impact indicators annexed to the shareholders' agreement could also be required in every form of crowdfunding.

Enhancing the Greenwashing risk score methodology.

Through the running of the Greenwashing risk score (GWS) on more than 219 projects extracted from the reward-based crowdfunding platform Kickstarter, limitations of the methodology were identified. This study offers the following recommendations to enhance the methodology and provide more robust outcomes in further studies.

First, through the experimentation of the GWS, we noticed that the so-called sustainable corporations often involved an innovative technology, or at least a poorly understood technology. To assess whether such technologies are truly energy efficient, the searcher should look for information that provide evidence of the impact of such technology and explanations making this technology understandable by the public. It is even more useful if the sample is composed of technological projects since the core business often relates to a specific technology. Two situations often appeared. In the first case, a technology is cited without any more information about it, aside from its problem-solving function. In the second case, a technology is cited with lots of information regarding its efficiency (scheme, figures, …) but the information released are very dense and not always accessible to the public. To enhance the GWS, the methodology should track information that could have released the entrepreneur to reduce the asymmetry of information between him and the possibly neophyte backer. Consequently, we recommend that the methodology looks for the origins of management team knowledge regarding sustainability issues (e.g. the staff's academic or professional backgrounds, the hiring of a consultancy firm, the entrepreneur stating being an autodidact in sustainability, …). In addition, we should look for information that substantiate the scientific argumentation (e.g. scientific proofs, third-party certifications, etc. …). A very informative experience would be to hire an environmentalist engineer to check projects and evaluate whether the innovations mentioned are groundbreaking or misleading.

Second, the GWS methodology could be enhanced to be more appropriate for other platforms. Especially, the "Environmental commitments" options are specific to Kickstarter whereas it provides very little information in the current study (only 1 project out of 219 projects has filled one of the options). As a result, this part could be eliminated without incidences on our results and would allow the model to fit to other platforms. Yet, if further studies are run through Kickstarter, it is nonetheless instructive to keep this feature within the methodology to observe when will entrepreneurs start to consider those options as standards. Such information would be an interesting signal that people are then

more willing to measure and report their positive impact regardless of whether they use greenwashing or not.

Third, the inputs included in the model designed in this study can be challenged on the following points. Regarding the illustration part, the weights attributed to colors and natural elements could be raised to better reflect the power of colors in the decision-making process (Singh, 2006). Since it appeals to the unconscious of individuals, the risk is even bigger, and weights should reflect this higher risk. In addition, the detection of fake label may provide explanatory power to the model. Terrachoice study on housing consumption (2010) shows that more than 30% of products certified by an ISO 14024 program, were sin free against 4.4% in the study global result. Consequently, spotting widespread models and tailor-made models can provide valuable information about scams in crowdfunding platforms.

Relating to the impact reporting part, this study shows that projects often focus on connecting their business with a global issue. An interesting item to consider would be the disproportion between the solution promoted by the entrepreneur and the global issue it is said to solve. The promotion of realistic features should be incentivized by the crowdfunding platforms.

Finally, the assessment of scams indicators could feed the GWS methodology. Indeed, scams indicators on crowdfunding platforms should be very interesting to explore. Scams indicators can reveal certain behaviors from the management team (e.g. spelling errors, formal sentences, etc. …). Those indicators can give an indicator about the likelihood of one entrepreneur to be dishonest. Considering a fixed green features score, the psychological score could give more weigh to the quantity of green features used if they are combined with a great share of scams indicator. Thus, a suspected dishonest entrepreneur would be attributed a bigger risk of greenwashing than another one for a fixed scoring. One scam indicator that could be useful and not yet investigated by previous academic literature is the tracking of names differing between the Kickstarter account's owner and the name of the founder written on the campaign page.

Study limitations and future research.

Most of all, the present study was limited by the size of the sample. 219 projects are not enough to provide significant results about the impact of greenwashing on crowdfunding platforms and post-campaign development. Common searchers about crowdfunding go through hundreds of projects to

obtain significant results (e.g. Mollick and al., 2014; Calic and al., 2016). The number of projects included in the sample should be even greater since our study is the first to explore greenwashing on crowdfunding projects and cannot benefit from previous experiences results. Consequently, no firm conclusions are drawn from this study, but only interesting insights are outlined. The same analysis should be extended to thousands of other projects thanks to data extractors to confirm our results.

This study focuses on reward-based crowdfunding, excluding other forms of crowdfunding such as equity-based crowdfunding, donations-based crowdfunding, or debt-based crowdfunding. No study has explored greenwashing within those types of crowdfunding, and it would be very interesting to conduct those analysis to distinguish commonalities and divergence issues based on rewards type differences. Similarly, since our study is limited to technological projects in reward-based crowdfunding, further studies focusing on different product categories could be interesting to implement and compared with the results of this study. Since greenwashing is a new subject, a long-term study over time, locations and forms of crowdfunding would bring out interesting conclusions. Such studies would put the shed on the evolution of greenwashing and recommend measures to mitigate it as soon as possible. One sector to address would be crowdfunding platforms dedicated to impact investing. An hypothesis to validate would be that there is less greenwashing on crowdfunding platforms dedicated to sustainability.

On another scope, complementary to the analysis of the impact of greenwashing on corporations, studies could be conducted to find the drivers of greenwashing i.e. testing which independent variables could explain Greenwashing risk score (dependent variables) through a regression model.

CONCLUSIONS

This paper introduces a new methodology to detect greenwashing tailored to crowdfunding platforms. The Greenwashing risk score (GWS) aims at filling the limitations of existing score grid in the advertising industry by providing a method mostly based on objective criterions rather than gut feeling. Since no studies have been investigated greenwashing on crowdfunding platforms before, indicators of greenwashing feeding up the model have been drawn from previous academic litterature about greenwashing in advertising, greenwashing through CSR reports and scams in the crowdfunding arena. The GWS was run over a sample of 219 projects using green features in their pitches. Based on the scoring obtained, this study first explores whether crowdfunding is afflicted by greenwashing. Second, this paper investigates the impact of greenwashing on the performance of crowdfunding campaigns and examines their success post-campaign. Among other findings, this study reveals that entrepreneurs most likely use greenwashing in their pitches to boost the performance of their campaign in an upward trend. Especially, projects that promote more technical products are less likely to use greenwashing to increase their performance. General public is then more at risk of being scammed since they are more attracted by retail businesses and have no mean to mitigate this asymmetry of information. In addition, this study initiates the understanding on the impact of greenwashing on the post-campaign development of self-declared sustainable ventures. This paper reports that projects using greenwashing through their fundraising campaign are less likely to survive over the coming years. However, 98% of the ventures composing the sample were still ongoing from 1 to 4 years after their fundraising showing that greenwashing has a negative impact on the development of ventures but is not a showstopper. Besides, the screening of the pitches outlined structural issues around impact reporting that underlines the limitations of the Greenwashing risk scoring. A key point is that most of entrepreneurs are still unaware of impact reporting best practices. Thus, some of them possibly involuntarily use greenwashing even though they run sustainable businesses. In addition, the lack of a legislative framework gives no incentives to crowd founders to substantiate their environmental claims and leads to a high risk of greenwashing in the crowdfunding arena. On the long term, the expansion of greenwashing may not only hurt the crowdfunding industry but the entire green market. Policy-makers willing to mitigate those risks should enhance the legal framework around greenwashing by creating binding sustainable reporting requirements tailored to early-stage ventures. Crowdfunding managers should take responsibility as well in the fight against greenwashing by providing creators standard methodologies and incentives to report their positive initiatives. For example, a crowdfunding platform could impel creators to act in good faith and inform potential backers all at once by implementing a similar greenwashing risk scoring algorithm. Future researches can improve the understanding about the impact of greenwashing on the success of ventures during and after their fundraising campaigns by increasing the size of the sample and explore greenwashing through other product categories and forms of

greenwashing (e.g. crowd equity, debt-based greenwashing, …). The GWS methodology can also be enhanced to better cope with the lack of impact measurement standardization. The substitution of positive impact assessment by the extent to which one entrepreneur shows characteristics of a frauder on investigated scams determinants is an avenue to explore.

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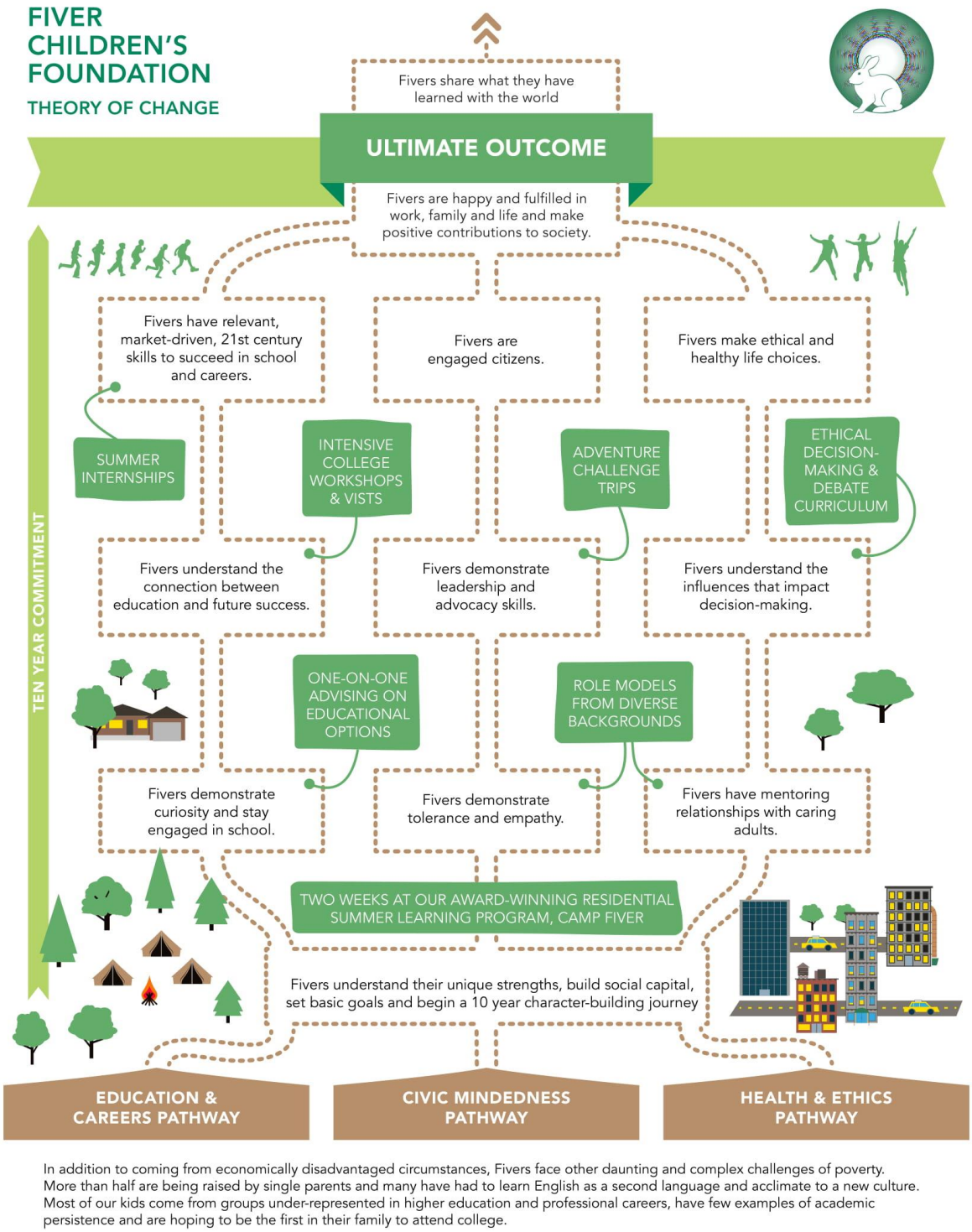
APPENDICES

Appendix 1: Theory of change: the case of Fiver's children education.



Source: The management center, the Theory of Change.

Appendix 2: Measurement methodologies and objectives.

Positive impact measurement methodology	Objective
Environmental, Social and Governance (ESG)	ESG analyzes the positive initiatives implemented by a company through indicators sorted in 3 categories: Environmental, Social, and Governmental
Social Return on Investment (SROI)	SROI puts a monetary value on social benefits. Then, SROI compares public and private benefits to the costs involved.
Theory of change (TOC)	TOC run a causality analysis to determinate how to reach long term goals based on the entire value chain.
Mission Alignment	Mission alignment methods are useful in measuring execution against mission and end goals.
Experimental and Quasi experimental methods	Experimental methods evaluate what would happen if no interventions were runned. This way, it better assesses the benefits of interventions.

Source: Authors' creation.

Appendix 3: 7 sins of Greenwashing, Terrachoice, 2007.

Source: Sinsofgreenwashing.org: *The Sins of Greenwashing*, Terrachoice, 2007.

Appendix 4: 10 signs of Greenwashing, Futerra, 2008.

Source: Understanding and preventing Greenwash: A business guide, Hurucchy and al., 2009.

Appendix 5: The 9 signs of Greenwashing (Original version), ADEME, 2012.

GREENWASHING, LES 9 SIGNES QUI NE TROMPENT PAS.

D'un coup d'œil, voici les mauvaises habitudes les plus courantes qui transforment l'usage de l'argument écologique et de l'argument « DD » en abus.

1. Un vrai mensonge.

- Il n'y a rien d'écologique dans le produit ou le service vanté comme tel.
- La démarche de développement durable vantée n'existe pas. C'est rare, heureusement.

2. Une promesse disproportionnée.

- Le produit ou service a un intérêt écologique, mais cela ne le rend pas pour autant inoffensif ni bénéfique pour l'environnement. Or, le message omet cette précision et laisse croire à un intérêt écologique supérieur à la réalité, voire à l'absence totale d'impact du produit ou service sur l'environnement.
- La démarche existe, mais n'est pas aussi développée que le message le prétend ou le laisse croire.

3. Des mots vagues.

Le vocabulaire utilisé est imprécis, trop général... et n'est pas défini dans le message.

4. Des informations insuffisantes.

Le produit ou la démarche DD a vraisemblablement un intérêt pour l'environnement, mais on comprend mal pourquoi, comment, et où s'informer davantage.

5. Une image trop suggestive.

Le visuel utilisé suggère que :

- le produit ou service possède des vertus écologiques qu'il n'a pas ou peu.
- la démarche a une envergure, un intérêt qu'elle n'a pas ou peu.

6. Un faux label.

Un « label écologique » ou de « développement durable » fait croire à un véritable label, alors qu'il s'agit d'un label « maison » conçu pour l'occasion sans méthode d'attribution ni contrôle d'un organisme compétent et indépendant.

7. Une mise en avant hors sujet.

- L'écologie est évoquée, par exemple à travers une action que l'entreprise a menée par ailleurs, mais cela n'a aucun lien avec le produit ou service vanté dans la campagne.
- Le développement durable est évoqué, par exemple à travers une action que l'entreprise a menée dans le cadre de cette démarche, mais cela n'a aucun lien avec le produit ou service vanté dans la campagne.

8. Des preuves inexistantes.

Mais où sont les preuves ? Il est impossible de les obtenir auprès de l'entreprise ou sur son site internet. Ou alors elles ne sont pas crédibles.

9. Une fausse exclusivité.

- L'intérêt écologique est vanté comme exclusif, alors que la loi oblige tous les produits ou services similaires à l'adopter, ou alors que tous les concurrents le font déjà.
- Les actions menées par l'entreprise dans le cadre de sa démarche sont vantées comme exclusives et innovantes, alors que la loi oblige toutes les entreprises à mener de telles actions.

Source: "The 9 signs of Greenwashing", ADEME, 2012.

Appendix 6: Descriptive statistics on the composition of the sample.

Table 3: Sample composition: (A) Projects by location.

Countries / States	Number	%
US	130	59.36%
Non-US	89	40.64%
Total	219	100%

Source: Authors' computations.

Table 3: Sample composition: (B) Projects by location

Countries / States	Number	%
Arizona	1	0.46%
Australia	7	3.20%
Austria	1	0.46%
California	51	23.29%
Canada	12	5.48%
China	2	0.91%
Colorado	6	2.74%
Connecticut	1	0.46%
Denmark	3	1.37%
Florida	3	1.37%
France	5	2.28%
Georgia	2	0.91%
Hong Kong	4	1.83%
Idaho	1	0.46%
Illinois	5	2.28%
Indiana	1	0.46%
Iowa	5	2.28%
Ireland	1	0.46%
Israel	2	0.91%
Italy	2	0.91%
Japan	2	0.91%
Kentucky	1	0.46%
Maine	1	0.46%
Maryland	2	0.91%
Massachusett	9	4.11%
Missouri	1	0.46%
Netherlands	3	1.37%
Nevada	3	1.37%
New Hampshire	1	0.46%
New Jersey	2	0.91%
New York	17	7.76%
New Zealand	1	0.46%
North Carolina	5	2.28%
Norway	2	0.91%
Ohio	1	0.46%
Oregon	2	0.91%
Portugal	1	0.46%
Singapore	4	1.83%
Spain	4	1.83%
Sweden	3	1.37%
Switzerland	3	1.37%
Texas	9	4.11%
Tonga	1	0.46%
UK	12	5.48%
Utah	9	4.11%
Virginia	1	0.46%
Washington	3	1.37%
Wisconcin	1	0.46%
Total	219	100%

Source: Authors' computations.

Table 4: Sample composition: projects by category.

Categories	Number	%
3D printing	9	4.09%
Apps	1	0.45%
DIY Electronics	8	3.64%
Fabrication Tools	3	1.36%
Flight	1	0.45%
Gadgets	66	30.00%
Hardware	52	23.64%
Makerspaces	2	0.91%
Robots	3	1.36%
Software	2	0.91%
Sound	3	1.36%
Space Exploration	2	0.91%
Technology	55	25.00%
Wearables	6	2.73%
Web	6	2.73%
Total	219	100%

Source: Authors' computations.

Table 5: Sample composition: projects by crowdfunding goal.

Goal	Number	%
< 1 000	14	6.4%
1 000 -10 000	68	31.1%
10 0000 - 100 000	132	60.3%
100 000 - 1M	5	2.3%
Total	219	100%

Source: Authors' computations.

Table 6: Sample composition: projects by green filter.

Green word	Number	%
Zero	2	0.91%
Contamination	3	1.37%
Planet	6	2.74%
Eco friendly	7	3.20%
Environmental	4	1.83%
Reusable	4	1.83%
Energy	18	8.22%
Green	5	2.28%
Organic	6	2.74%
Sustainability	8	3.65%
Chemicals	2	0.91%
Emissions	1	0.46%
Renewables	3	1.37%
CO2	1	0.46%
Waste	3	1.37%
Ecological	1	0.46%
Clean	5	2.28%
Energy Saving	9	4.11%
Solar	39	17.81%
Nature	11	5.02%
Pollution	11	5.02%
Plastic	4	1.83%
Electrical	44	20.09%
Upcycle	3	1.37%
Recycled	10	4.57%
Biodegradable	1	0.46%
Climate change	2	0.91%
Energy efficient	3	1.37%
Alternative	2	0.91%
Carbons	1	0.46%
Total	219	100.00%

Source: Authors' computations.

Appendix 7: The Greenwashing risk score model.

Name of the project: XXXXX

	Data	Criteria	Points allocation rules	Coefficients	Scoring	Total scoring
DESCRIPTION	ILLUSTRATIONS	In which proportion the color green (or blue) is used?	**Indications:** - Kickstarter's logo is not included in the scoring. - Green/blue spotting has to be considerered out of natural elements (e.g. if there is a tree, there is undoubtedly green but it should not be included in the scoring since natural elements will be accounted for in the next criteria based on natural elements). **Points allocations:** Put 1 in the scoring cell next to the category where the project belongs.			
			• No green/blue on the illustrations.	0		
			• There are green/blue on some illustrations but it does not seem to be necessarily linked with the idea of nature/greenness. → e.g. : part of the product is green by nature like electrical wirings. → e.g. : lots of blue is used for a milk product because it is the reference color for beverages and not only because it makes people think to sustainability.	0.94		
			• A minor part (<50%) of the illustrations are green/blue and seems to be necessarily linked with the idea of nature or greenness.	1.88		
			• A major part (>50%) of the illustrations are green/blue and make the viewer think of nature or greenness.	2.81		
			• A major part (>50%) of the illustrations are green/blue and and seems to give environmental features to the product.	3.75		
		In which proportion natural elements are used?	**Indications:** - Natural elements include: forest, tree, plants, wood, water, oceans, sky, mountains, countryside, outdoors, bugs, ... **Points allocations:** Put 1 in the scoring cell next to the category where the project belongs.			
			• No natural elements on the illustrations.	0		
			• There are natural elements on some illustrations but the intent behind the staging seems to be more the set up of a quiet atmosphere than the promotion of eco-friendliness. → e.g. : a plant on a desk near to the hi-tech product,a window behind the product.	0.94		
			• A minor part (<50%) of the illustrations includes natural elements that make the viewer think of eco-friendliness. → e.g. : icones with trees, and peoples / a product in a forest on less than 50% of the illustrations.	1.88		
			• A major part (>50%) of the illustrations includes natural elements that make the viewer think of eco-friendliness. → e.g. : icones with trees, and peoples / a product in a forest on more than 50% of the illustrations.	2.81		
			• A major part (>50%) of the illustrations includes natural elements and seems to give environmental features to the product. → e.g. : a product in a forest supported by bullet words lik "eco-friendly", "pesticides-free" on more than 50% of the illustrations.	3.75		
	TITLE	Are there green words in the title of the product/service ?	**Indications:** - The title of the project is the first sentence of the webpage. It appears in bold letter on the research page where all the projects are displayed. - The word has to be included in the green words list (see Appendix 8). **Points allocations:** Put 1 in the scoring cell next to the category where the project belongs.			
			• At least one green word in the title of the product/service.	10		
			• At least one green word in the title of the product/service, but doesn't seems to give environmental sense to the tittle.	5		
			• No green words in the title of the product/service.	0		

DESCRIPTION	SHORT PITCH	Are there green words in the short pitch description of the product/service ?	**Indications:** - The "short pitch" of the project is the second sentence of the webpage, on the right side of the first illustration. It appears in bold letter on the research page where all the projects appear. - The word has to be included in the green words list. **Points allocations**: Put 1 in the scoring cell next to the category where the project belongs.			
			• At least one green word in the short pitch of the product/service	10		
			• At least one green word in the short pitch of the product/service, but doesn't seems to give environmental sense to the tittle. → e.g. : "TripOutside.com: an easier way to book outdoor adventures!": outdoors is part of the green words list bu seems to only describe the activity here more than highlighting the natural aspect of it.	5		
			• No green word in the short pitch of the product/service.	0		
	STORY/ RISK AND CHALLENGES/ ENVIRONMENTAL COMMITMENTS	In which proportion does the description contains green words ?	Enter the total number of words (units, **text and pictures included)** in the following empty cell. **Indications:** - All the words from "Story" to the last word before "Learn about accountability […] Kickstarter". - Words on illustrations should be included (except illustrations summarizing the rewards for investors, and list of press partnerships, labels, third-parties certifications). - Words on videos are not included in the count. - The total number of words exclude "stop words" (Appendix 9).			
			Enter the total number of **green** words (units, **without pictures**) in the following empty cell. **Indications:** - All the words from "Story" to the last word before "Learn about accountability […] Kickstarter". - Words on illustrations should be included (except those illustration summarizing the rewards for investors, and list of press partnerships, labels, third-parties certifications). - Words on videos are not included in the count.			
			Enter the total number of **green** words (units, **on pictures**) in the following empty cell. **Indications:** - All the words from "Story" to the last word before "Learn about accountability […] Kickstarter". - Words on illustrations should be included (except those illustration summarizing the rewards for investors, and list of press partnerships, labels, certifications). - Words on videos are not included in the count.			
			(Automatic) Compute the % of green words used. **Indication:** Formula: Total number of green words / Total number of words.			
			(Automatic) Points allocation relative to green words used %.	1		**0**

			Indications: -The "environmental commitment" part is optional. If filled, it appears at the end of the webpage. **Points allocations:** Put 1 in the scoring cell next to each part filled by the entrepreneur.			
	ENVIRONMENTAL COMMITMENTS	Which part(s) is/are completed ?	• Reusability and reyclability	0.5		
			• Sustainable materials	0.5		
			• Environmentally friendly factories	0.5		
			• Sustainable fulfillment and distribution	0.5		
			• Something else	0.5		
			Subtotal			0
					Total =	
			Indications: - The level of information should be assessed thanks to all the description areas (not only the environmental commitments part)**.** - In the case of several environmental arguments put forward by the entrepreneur, choose the category concerning the level of information of the majority of the arguments (>50%). - The level of information will be check according to 5 criteriions: • ***Vagueness of the arguments:*** environemental arguments loose in information level if they are made of blanket terms. • ***Figured impact:*** environmental arguments gain in information level if they are sustained by figures bringing information about the impact generated, the defined target and planning. Besides, environmental arguments gain in information level if figures are given at the company-level rather than at the industry or at a larger scale. • ***Impact measurement methodology:*** environmental arguments gain in information level if the entrepreneur can describe the way he will measure its progress (material items, unity, frequency , ...) to demonstrate its willingness to create a sustainable business. • ***Meaning*** : environmental arguments gain in information level if the entrepreneur provides information that gives perspective to the previous information given (e.g normative tresholds of the industry, regulation standards, clarification of the specifics terms). **Points allocation:** For each criteria, choose the category that best describes the way information are released.			
Impact assessment	CAMPAIGN PAGE	To what extent does the entrepreneur provides evidence that its environmental approach is real ?	• **Vagueness of arguments** (put 1 in the cell next to the category where the project belongs, let 0 in the other cells)			
			Environmental arguments made of blanket terms only.	5		
			Environmental arguments made of blanket terms with some general figures.	2.5		
			Environmental arguments made of necessary blanket terms supplemented by specific information (figures, specific terms).	0		
			No environmental arguments.	0		
			• **Figured impact** (put 1 in the cell next to the category where the project belongs, let 0 in the other cells)			
			Environmental arguments are not sustained by any figure.	5		
			Environmental arguments are sustained by general figures at a larger-scale than the company only (industry, world …).	2.5		
			Environmental arguments are sustained by few (<50%) figures including figures directly linked to the project (impact generated, targets, planning).	1.5		
			Environmental arguments are sustained by most (>50%) of the following figures directly linked to the project (impact generated, targets, planning).	0		
			No environmental arguments.	0		

			• **Impact measurement methodology** (put 1 in the cell next to the category where the project belongs, let 0 in the other cells)			
			No measurement process is described or stated.	5		
			A measurement methodology (or certification/label) is stated without any explanation.	2.5		
			A measurement methodology (or certification/label) is stated with few (<50%) of the following information (material items, unity, frequency, …).	1.5		
			A measurement methodology (or certification/label) is stated with most (>50%) of the following information (material items, unity, frequency, …).	0		
			No environmental arguments.	0		
			• **Meaning** (put 1 in the cell next to the category where the project belongs, let 0 in the other cells)			
			No meaning, interpretation are given to the figures stated (regulation standards, industry specifics) and complex terms are not defined.	5		
			Minor part (<50%) of the complex terms are defined / figures interpreted (regulation standards, industry specifics).	2.5		
			Major part (>50%) of the complex terms are defined / figures interpred ((regulation standards, industry specifics).	0		
			No environmental arguments.	0		
			Subtotal:			
Impact assessment	CAMPAIGN PAGE	Does the entrepreneur give information about the negative impact generated by the business ?	**Indications:** - The level information should be assessed thanks to all the description areas (not only the environmental commitments part). - If the entrepreneur has not shared any positive environmental arguments, thus allocate 0 to the scoring. - In the case of several negative externalities put forward by the entrepreneur, choose the category concerning the level of information of the majority of the arguments (>50%). **Points allocation:** Put 1 in the category where the project belongs, let 0 in the other cells.			
			• At least 1 positive environmental argument is given but no information are given about the negative externalities of the activity.	5		
			• At least 1 positive environmental argument is given but negative externalities seem to be only implied by the wording without clear statement nor measurement process.	4		
			• At least 1 positive environmental argument is given but negative externalities are mentionned for competitors, as if the project offered a full solution to the problem.	3		
			• At least 1 positive environmental argument is given and some information about the negative impact generated by the project is given with blanket terms but indicating that the project should take care of it.	2		
			• At least 1 positive environmental argument is given and information about the negative impact generated by the project is given with some details (at least one of the following elements: figures, target, deadlines, measurement methodology).	1		
			• At least 1 positive environmental argument is given and information about the negative impact generated by the project are given with high details (most of the following elements: figures, target, deadlines, measurement methodology).	0		
			• No positive environmental arguments are given neither negative externalities.	0		
					Total =	

S

Environmental positioning of the company	CAMPAIGN PAGE	What is the true environmental positioning of the company ?	Estimate the environmental positioning of the business by looking at the weight of green feature embodied relatively to the whole value chain of the product (including manufacturing, consumption and recycling). **Allocate the letter A, B, C, D or E** based on the category to which the business is in. **Details of each category:**			
			A) No environmental feature: from raw material to waste disposal, the value chain doesn't include green process.	1.54		0
			B) Outside the core business: from raw material to waste disposal, the value chain doesn't include green process but the company donates a part of the revenue to charities or externalizes some of its activities to environmental structure (e.g purchase of recycled plastics) or is part of an industry that is greener by nature without having building sustainable value chain at the company level. → e.g : online signing app (industry: reduce papers but the company has not study the pollution it is emitting by saving data online etc...)	1.23		
			C) Minor part of the business: < 50% of the value chain is structured to be sustainable.	0.92		
			D) Major part of the business: > 50% of of the value chain is structured to be sustainable.	0.62		
			E) Green business : the whole value chain is structured to be sustainable.	0.31		
					Total =	
					Total GWS =	

Source: Authors' creation.

Appendix 8: Green words.

Total: 484

21st century	disposability	garden-smart	green up	pesticide	slow-degrading
additive	disposable	genetically modified	green your	pesticide-free	slow-fashion
additives	dispose	ecotruck	green zone	pesticides	slow-life
agroecology	drought	eco-truck	greener	petrol-based fuel	small changes
air capture	durable	eco-village	greener life	planet	smart-energy
air pollution	dying's soils	e-cycling	greenhouse	planet-friendly	smart-plant
all-natural	earth	educated decisions	greenwashing	planet's	smog
alternative	earth-conscious	endanger	groundwater	plant	smog-free
alternatives	earth-friendly	endangered	hand-carved	plantable	solar
antipollution	eco	enduring	hand-harvested	plant-based	solve conventional
anti-pollution	eco-attitude	energetic	handmade	plants	problems
artificial	eco-building	energized	harvest	plastic waste	substitute
paper-free	eco-centre	energy	health	plastic-bottles	sunlight
atmosphere	eco-choice	energy-efficiency	healthiest	plastic-free	superfood
atmospheric	eco-citizen	energy-efficient	healthy	plastic-waste	sustainability
awareness	eco-conscious	energy-hungry	heat-trapping gasses	poison	sustainable
balance	eco-consumption	energy-saving	help the environment	poisonous	sustainable development
balanced	eco-contribution	enviro	hemp	pollutant	goals
be aware	eco-driving	environment	herbicide	pollute	sustainably
better world	eco-effectiveness	environmental	herbicides	polluted	the precautionary
bio	eco-efficiency	environmentalist	high quality	polluter	principle
biobased	eco-elegant	environmentally	home-compostable	polluting	think global, act local
bio-car	eco-friendliness	environmentally-friendly	hormone-disrupting	pollution	threat
biocarburant	eco-friendly	ethic	chemicals	post-consumer waste	threaten
biodegradable	eco-gestures	ethical	household hazardous	practice	threatened
biodegrade	eco-habitat	ethics	waste	practices	tomorrow
biodiverse	eco-house	everlasting	how to green your	preservation	toss
biodiversity	eco-housing	e-waste	humanity	preserve	toxic
bio-diversity	eco-innovation	exposure	hydroelectric power	prevent	toxicants
biodynamic	ecolabel	extinct	hydro-fracking	prevention	toxin-free
bio-dynamic	eco-label	extinction	hydroponics	protect	toxin-rich
bioenergy	eco-labelling	fair	hydropower	protection	transparency
bio-energy	ecological	farm-raised	icecap	pure	transparent
biofuel	ecology	fauna	impact	raised without	trash
biomass	eco-materials	fish die-off	impacts	re use	tree
biopesticide	ecomobility	flood	impurities	reafforest	trees
business neutrality	eco-mobility	flora	initiative	recyclable	trendy
business's neutrality	eco-neighborhood	footprint	insecticides	recycle	unplug
carbon compensation	eco-neighbourhood	forest management	landfill	recycled	unrecyclable
carbon emissions	eco-organization	fossil fuels	landfills	recycling	unsafe
carbon footprint	ecoponics	free of toxins	least impactful	reduce	unspoilt
carbon neutrality	eco-refill	fresh air	left for waste	reduction	unsustainable
carbon offset	eco-responsibility	fresh vegetables	leftover	refined food	unwanted waste
carbon offsets	eco-responsible	fresh water	leftovers	reforestation	upcycle
carbon sequestration	ecosphere	fuel cells	less	regenerate	upcycled
carbon-negative	eco-sustainable	fumes	lesser	regenerated	upcycling
carbon-negatives	ecosystem	garbage	life	regeneration	urban farms
carbon-neutral	eco-system	garden-smart	lifecycle	regenerative	use it wisely
carbons	ecosystems	genetically modified	lifestyle	rejuvenate	vegan
chemical	eco-technologies	glacier retreat	lifetime	rejuvenation	vegetarian
chemical free	eco-technology	global warming	live green	renewable	vegetarian-fed
chemical-free	ecotourism	GMO	live thoughtfully	renewables	vertical farms
chemically intensive	ecotruck	go green	liveability	renewal	void
chemicals	eco-truck	good-for-the-earth	living	repurpose	wastage
circular components	eco-village	grandchildren	local	repurposed	waste
circular economy	e-cycling	grass	locally	reshape	waste management
circular materials	educated decisions	green computing	long term effects	residues	waste-free
circular solutions	endanger	green initiative	long-lasting	resource	waste-reducing
clean	endangered	green innovation	low-carbon	resourceful	water management
cleaner	enduring	green innovations	low-impact	resource-intensive	water pollution
cleans	energetic	green invention	make a difference	resources	waterless
cleantech	energized	green inventions	make an effort	resource-saving	weed killer
cleanup	energy	green living	mindset	respect	wellness
clean-up	energy-efficiency	green materials	minimal	responsibility	wildlife
clear-up	energy-efficient	Green Party	minimalism	responsible	wind farm
climate change	energy-hungry	green planet	minimalist	responsibly	wind turbine power
climate neutral	energy-saving	green practices	minimal-waste	restore	wind turbines
climate scientist	enviro	green routine	Mother Nature	restoring	without water
climate-change	environment	green space	natives	retired plastics	woods
climate-changing	environmental	green spaces	natural	reusability	worthwhile cause
CO2	environmentalist	green tech	naturally	reusable	you don't have to
collapse	environmentally	green technology	nature	reuse	sacrifice quality to
compensation	environmentally-friendly	glacier retreat	negative-waste	re-use	zero
compost	ethic	global warming	net zéro	re-used	
compostable	ethical	GMO	next generation	reusing	
composting	ethics	go green	next to natural	revitalize	
conscious	everlasting	good-for-the-earth	no preservatives	right direction	
consciousness	e-waste	grandchildren	non-biodegradable	right thing	
conservation	exposure	grass	non-polluting	rubbish	
conservationist	extinct	green computing	nonrenewable	safe	
conservationists	extinction	green initiative	non-renewable	safeguard	
conserve	fair	green innovation	nonrenewables	salvage	
conserves	farm-raised	green innovations	non-renewables	salvaged	
contaminate	fauna	green invention	non-toxic	save energy	
contaminated	fish die-off	green inventions	ocean	save the planet	
contaminates	flood	green living	ocean's	saving	
contamination	flora	green materials	organic	savings	
decontaminate	footprint	Green Party	organically	scarce	
decontamination	forest management	green planet	outdoor	SDGs	
deforest	fossil fuels	green practices	outdoors	sea level	
deforestation	free of toxins	green routine	overfishing	sewage	
degradable	fresh air	green space	overgrazing	share	
degrading	fresh vegetables	green spaces	overproduction	shared	
dependency	fresh water	green tech	palm oil free	shift	
deplete	fuel cells	green technology	palm oil-free	single-origin	
depletion	fumes	green thinking	paperless	single-use	
devastating	garbage	green to the core	permaculture	single-used	

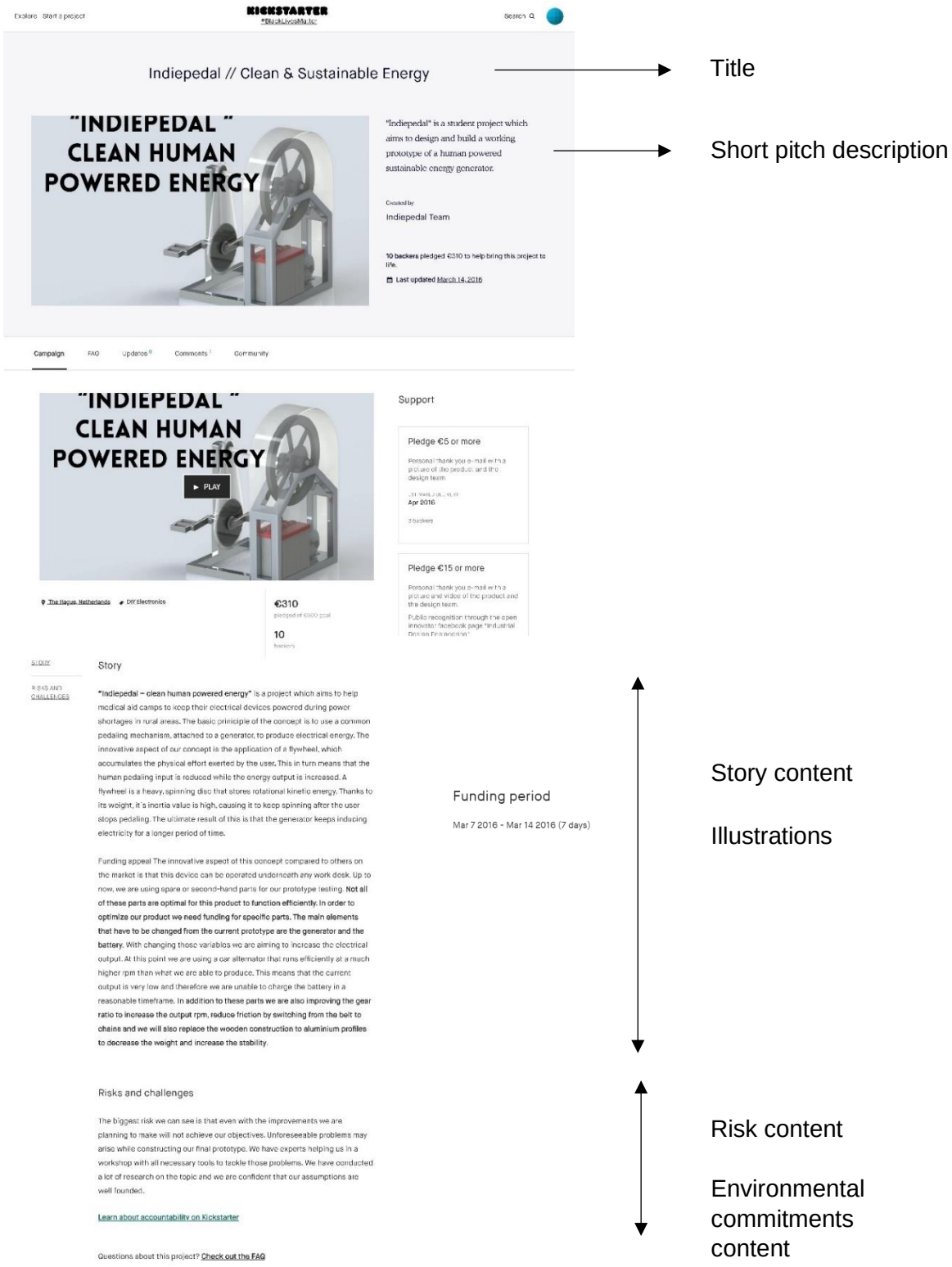
Source: Authors' creation based on countwordsfree.com data.

Appendix 9: Stop words.

Stop words Total: 850								
about	co.	hardly	mean	rd	there've	whilst	sincere	shes
above	com	has	meantime	re	these	whither	sixty	showed
abroad	come	hasn't	meanwhile	really	they	who	system	shown
according	comes	have	merely	reasonably	they'd	who'd	ten	showns
accordingly	concerning	haven't	might	recent	they'll	whoever	thick	shows
across	consequently	having	mightn't	recently	they're	whole	thin	significant
actually	consider	he	mine	regarding	they've	who'll	top	significantly
adj	considering	he'd	minus	regardless	thing	whom	twelve	similar
after	contain	he'll	miss	regards	things	whomever	twenty	similarly
afterwards	containing	hello	more	relatively	think	who's	abst	slightly
again	contains	help	moreover	respectively	third	whose	accordance	somethan
against	corresponding	hence	most	right	thirty	why	act	specifically
ago	could	her	mostly	round	this	will	added	state
ahead	couldn't	here	mr	said	thorough	willing	adopted	states
ain't	course	hereafter	mrs	same	thoroughly	wish	affected	stop
all	c's	hereby	much	saw	those	with	affecting	strongly
allow	currently	herein	must	say	though	within	affects	substantially
allows	dare	here's	mustn't	saying	three	without	ah	successfully
almost	daren't	hereupon	my	says	through	wonder	announce	sufficiently
alone	definitely	hers	myself	second	throughout	won't	anymore	suggest
along	described	herself	name	secondly	thru	would	apparently	thered
alongside	despite	he's	namely	see	thus	wouldn't	approximate	thereof
already	did	hi	nd	seeing	till	yes	aren	therere
also	didn't	him	near	seem	to	yet	arent	thereto
although	different	himself	nearly	seemed	together	you	arise	theyd
always	directly	his	necessary	seeming	too	you'd	auth	theyre
am	do	hither	need	seems	took	you'll	beginning	thou
amid	does	hopefully	needn't	seen	toward	your	beginnings	thoughh
amidst	doesn't	how	needs	self	towards	yours	begins	thousand
among	doing	howbeit	neither	selves	tried	yourself	biol	throug
amongst	done	however	never	sensible	tries	yourselves	briefly	til
an	don't	hundred	neverf	sent	truly	you've	ca	tip
and	down	i'd	neverless	serious	try	zero	date	ts
another	downwards	ie	nevertheless	seriously	trying	a	ed	ups
any	during	if	new	seven	t's	how's	effect	usefully
anybody	each	ignored	next	several	twice	when's	et-al	usefulness
anyhow	edu	i'll	nine	shall	two	why's	ff	've
anyone	eg	i'm	ninety	shan't	un	b	fix	vol
anything	eight	immediate	no	she	under	c	gave	vols
anyway	eighty	in	nobody	she'd	underneath	d	giving	wed
anyways	either	inasmuch	non	she'll	undoing	e	hed	whats
anywhere	else	inc	none	she's	unfortunately	f	heres	wheres
apart	elsewhere	inc.	nonetheless	should	unless	g	hes	whim
appear	end	indeed	noone	shouldn't	unlike	h	hid	whod
appreciate	ending	indicate	no-one	since	unlikely	j	home	whos
appropriate	enough	indicated	nor	six	until	l	id	widely
are	entirely	indicates	normally	so	unto	m	im	words
aren't	especially	inner	not	some	up	n	immediately	world
around	et	inside	nothing	somebody	upon	o	importance	youd
as	etc	insofar	notwithstand	someday	upwards	p	important	You're
a's	even	instead	novel	somehow	us	q	index	
aside	ever	into	now	someone	use	r	information	
ask	evermore	inward	nowhere	something	used	s	invention	
asking	every	is	obviously	sometime	useful	t	itd	
associated	everybody	isn't	of	sometimes	uses	u	keys	
at	everyone	it	off	somewhat	using	uucp	kg	
available	everything	it'd	often	somewhere	usually	w	km	
away	everywhere	it'll	oh	soon	v	x	largely	
awfully	ex	its	ok	sorry	value	y	lets	
back	exactly	it's	okay	specified	various	z	line	
backward	example	itself	old	specify	versus	l	'll	
backwards	except	i've	on	specifying	very	www	means	
be	fairly	just	once	still	via	amoungst	mg	
became	far	k	one	sub	viz	amount	million	
because	farther	keep	ones	such	vs	bill	ml	
become	few	keeps	one's	sup	want	bottom	mug	
becomes	fewer	kept	only	sure	wants	call	na	
becoming	fifth	know	onto	take	was	computer	nay	
been	first	known	opposite	taken	wasn't	con	necessarily	
before	five	knows	or	taking	way	couldnt	nos	
beforehand	followed	last	other	tell	we	cry	noted	
begin	following	lately	others	tends	we'd	de	obtain	
behind	follows	later	otherwise	th	welcome	describe	obtained	
being	for	latter	ought	than	well	detail	omitted	
believe	forever	latterly	oughtn't	thank	we'll	due	ord	
below	former	least	our	thanks	went	eleven	owing	
beside	formerly	less	ours	thanx	were	empty	page	
besides	forth	lest	ourselves	that	we're	fifteen	pages	
best	forward	let	out	that'll	weren't	fify	poorly	
better	found	let's	outside	thats	we've	fill	possibly	
between	four	like	over	that's	what	find	potentially	
beyond	from	liked	overall	that've	whatever	fire	pp	
both	further	likely	own	the	what'll	forty	predominantly	
brief	furthermore	likewise	particular	their	what's	front	present	
but	get	little	particularly	theirs	what've	full	previously	
by	gets	look	past	them	when	give	primarily	
came	getting	looking	per	themselves	whence	hasnt	promptly	
can	given	looks	perhaps	then	whenever	herseâ€•	proud	
cannot	gives	low	placed	thence	where	himseâ€•	quickly	
cant	go	lower	please	there	whereafter	interest	ran	
can't	goes	ltd	plus	thereafter	whereas	itseâ€•	readily	
caption	going	made	possible	thereby	whereby	mill	ref	
cause	gone	mainly	presumably	there'd	wherein	move	refs	
causes	got	make	probably	therefore	where's	myseâ€•	related	
certain	gotten	makes	provided	therein	whereupon	part	research	
certainly	greetings	many	provides	there'll	wherever	put	resulted	
changes	had	may	que	there're	whether	run	resulting	
clearly	hadn't	maybe	quite	theres	which	show	results	
c'mon	half	mayn't	qv	there's	whichever	side	section	
co	happens	me	rather	thereupon	while	sec	shed	

Source: Authors' creation based on countwordsfree.com data.

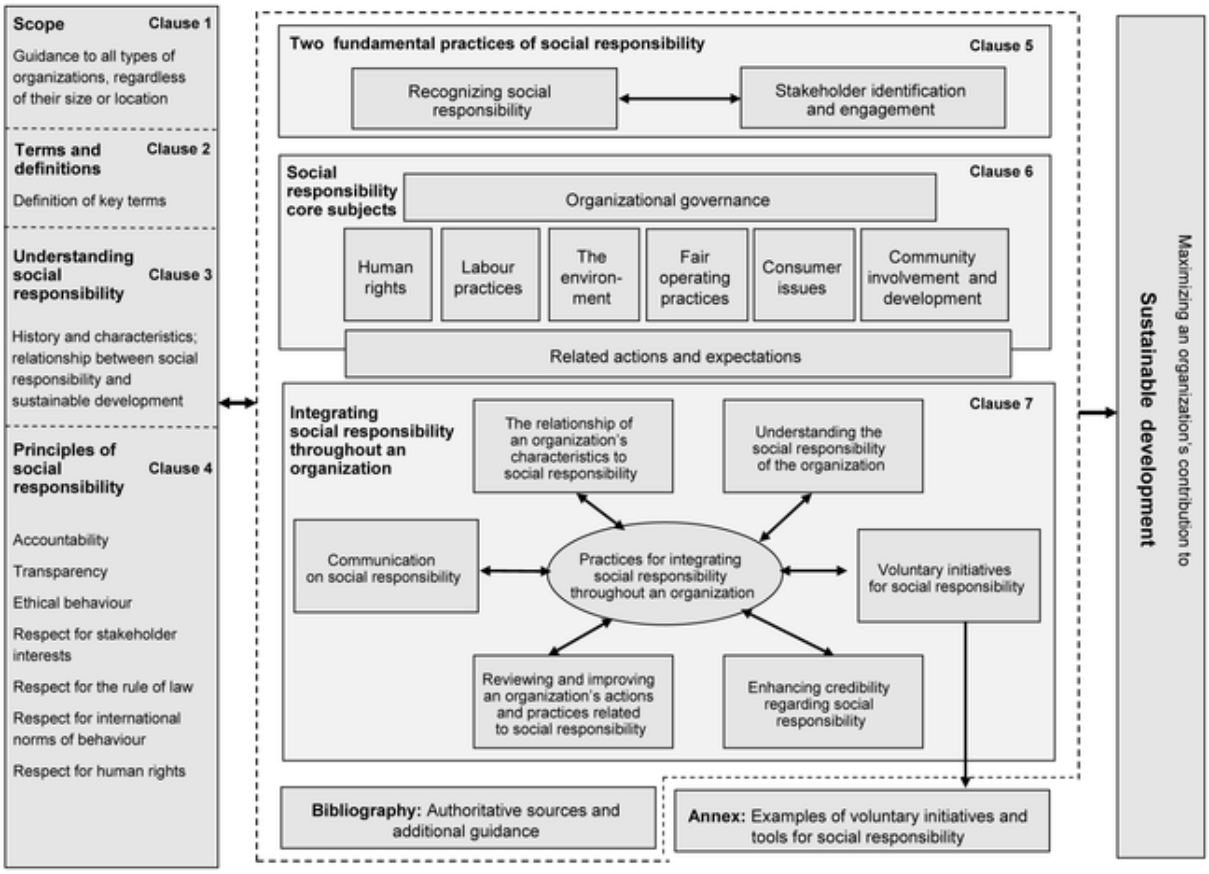
Appendix 10: Data extraction process on Kickstarter.



Source: Authors' creation based on Indiepal campaign page on Kickstarter.

Notes: There are no illustrations nor Environmental commitments part. The area where they would appear are approximately indicated.

Appendix 11: ISO 26000, 7 seven core themes and specific issues.



Source: ISO 26000 Post Publication Organisation, Schmidt and al., 2016.

ABBREVIATIONS USED

Corporate Social Responsibility (CSR)

Environmental, Social and Governance (ESG)

European Venture Philanthropy Association (EVPA)

Greenwashing risk score (GWS)

Key Performance Indicators (KPI)

Impact Management Project (IMP)

Return On Investment (ROI)

Supply Chain Council (SCC)

Sustainable Development Goals (SDG)

Social Purposes Organizations (SPOs)

Socially Responsible Investments (SRI)

Social Return On Investment (SROI)

Special Purposes Vehicle (SPV)

United Nations Sustainable Development Group (UNDG)

United States (US)

LIST OF ILLUSTRATIONS

List of tables

List of figures