

MASTER

Narrative framing in green technology crowdfunding an explorative study

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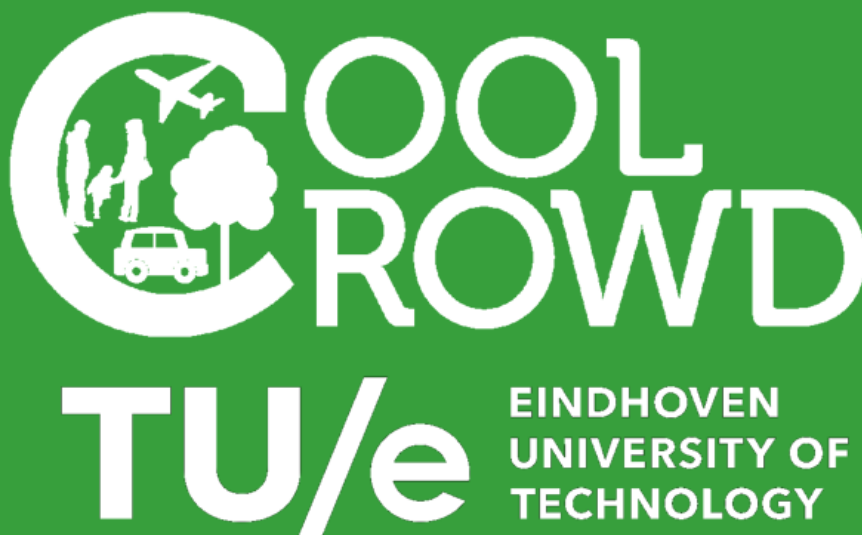
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MASTER THESIS

Report

NARRATIVE FRAMING IN GREEN TECHNOLOGY CROWDFUNDING *an explorative study*

MSc. Innovation Management
Master Thesis
School of Industrial Engineering & Innovation Sciences (IE&IS)



by **J.M. de Vries**

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March 19th, 2019

Narrative framing in green technology crowdfunding

an explorative study

by

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Key words: Green technology crowdfunding, Narratives, Climate change, Message framing, Framing attributes, Persuasiveness, Exploratory research

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I am wondering if anyone is checking this page on specific framing attributes while reading it. Probably not. I did. Not for this page, but for seventy-two crowdfunding campaign narratives. Some just one-pagers, some nearly a novel long. I caught myself spotting framing attributes anywhere: the newspaper, the back of my €0.89-half-a-litre beer from the store next to my house, and many other places. It was one of these moments I realized the end of my Master-program and life as a student, has come to an end.

After 2.5 years of chasing deadlines and surviving from one examination period to the next, the Master program is over. I think I can not properly describe the development I have personally been through, and how much I feel to have improved in so many different ways. Besides all the knowledge and skills I learnt during my time in Eindhoven, I made lots of new friends and have had the most incredible experiences. All the courses I took, the international semester in Ulsan, South-Korea, and the moments with all the great people I met, have truly changed my life.

I think I can say that, despite hard work and lots of discipline, the entire Master Thesis process has passed by smoothly. Not the least because of great mentoring, guidance and reading through my work again and again by Dr. Boukje Huijben. Therefore, I would like to take this opportunity to sincerely thank her for doing so. I was lucky enough to spend six weeks of the graduation period in Bergen, Norway, on invitation of Dr. Natalia Mæhle. Back in beautiful Norway, but surely also here in the Netherlands, both Dr. Natalia Mæhle and Dr. Pia Otte, have been accessible and willing to provide help anytime, for which I am very thankful. I think anyone who is taking the time (and patience) for reading my Master Thesis deserves some kind of appreciation, in particular the second- and third assessors from the Eindhoven University of Technology, for assessing my endeavors.

Last but not least, I want to mention my family, friends and roommates for always being with me. The past 2.5 years have sometimes been the worst, but most often been the best time of my life. I have already moved away from Eindhoven, but Eindhoven has become my second home, and I will come back many times for sure.

To every single person reading my Master Thesis: I hope you will enjoy reading it as much as I enjoyed writing it.

Thank you.


Jorick Machiel de Vries

Rotterdam,
March 19th, 2019

EXECUTIVE SUMMARY

This Master Thesis derives from a personal interest and aspiration to contribute to a globally-scaled transition in which a sustainable society, economy, and future is created. As final chapter of the Master of Science (MSc.) program of Innovation Management at the Eindhoven University of Technology.

Context of the Master Thesis

Climate change is arguably the foremost issue humanity is facing nowadays. The main contributor to this unprecedented problem is the agriculture industry; This industry accounts up for approximately 24% of the global greenhouse gas emission (IPCC, 2014). Besides, it heavily disrupts ecological water systems and river channels from their pristine states (Moss B. , 2007), it often destroys nature and wildlife by the utilizations and disposal of pesticides and fertilizers (Conway & Pretty, 2013) and causes large-scaled soil erosion (Skinner, et al., 1997). Hence, mitigating the widespread pollution of this industry by introducing new environment-friendly technologies for farmers could be a big step towards a sustainable future.

A project group that acknowledges the urgency of mitigating the agriculture's pollution, is CoolCrowd. CoolCrowd, a project consisting of an international and interdisciplinary research team, investigates the concept of installing and using climate-friendly technologies at Norwegian farms. The project assesses the feasibility of financing these technologies by off-setting CO₂-emissions from transport by a large amount of individual (micro-)investors. The CoolCrowd-project is a three-year proof of concept study establishing the level of interest amongst the Norwegian public, the interest of farmers in partaking in this conceptual scheme, and exploring possible business models for local climate crowdfunding in Norway (COOLCROWD, 2018).

Crowdfunding comes down to the following principle: Through an open call on the internet, entrepreneurs, initiators, care-takers, activists, or any other individual with any kind of purpose, attempts to assemble capital by larger amounts of individual investments, to finance a particular purpose. Crowdfunding mainly exists in four different types: Donation-based, Reward-based, Lending-based and Equity-based. The impact of multiple features and the way an entrepreneur presents an initiative, project or business idea, aiming to solicitate sufficient funding through crowdfunding, is widely recognized by various studies (Calic & Mosakowski, 2016; Frydrych, Bock, & Kinder, 2016; Sauro, 2014). Narrative framing is called "the key" (Sauro, 2014) and "essential" (Frydrych, Bock, & Kinder, 2016) to crowdfunding success. For CoolCrowd it might therefore be very valuable to understand the relation between how a narrative is framed and crowdfunding performances. More specifically, CoolCrowd's context to green technologies suggests it would benefit even more by understanding the correlation between narrative framing and green technology crowdfunding performance. Green technology in this research is defined as "*any craft, machinery or equipment developed from applied scientific knowledge intended to lessen or to restore human activity-induced air-, water- or soil pollution, or environmental exhaustion*".

Problem statement and research question

A preliminary literature review figured that upon this day no literature has been written on message framing attributes and linguistic styles in green technology crowdfunding (In this Master Thesis *message framing attributes and linguistic styles* is merged in the joint term *framing attributes*). Therefore, the first step in understanding the previously introduced correlation is to explore what framing attributes exists in green technology crowdfunding. For this reason, the research question of this research states:

Research question: *How do green technology crowdfunding projects founders frame their project's narrative to attract potential backers on online crowdfunding platforms?*

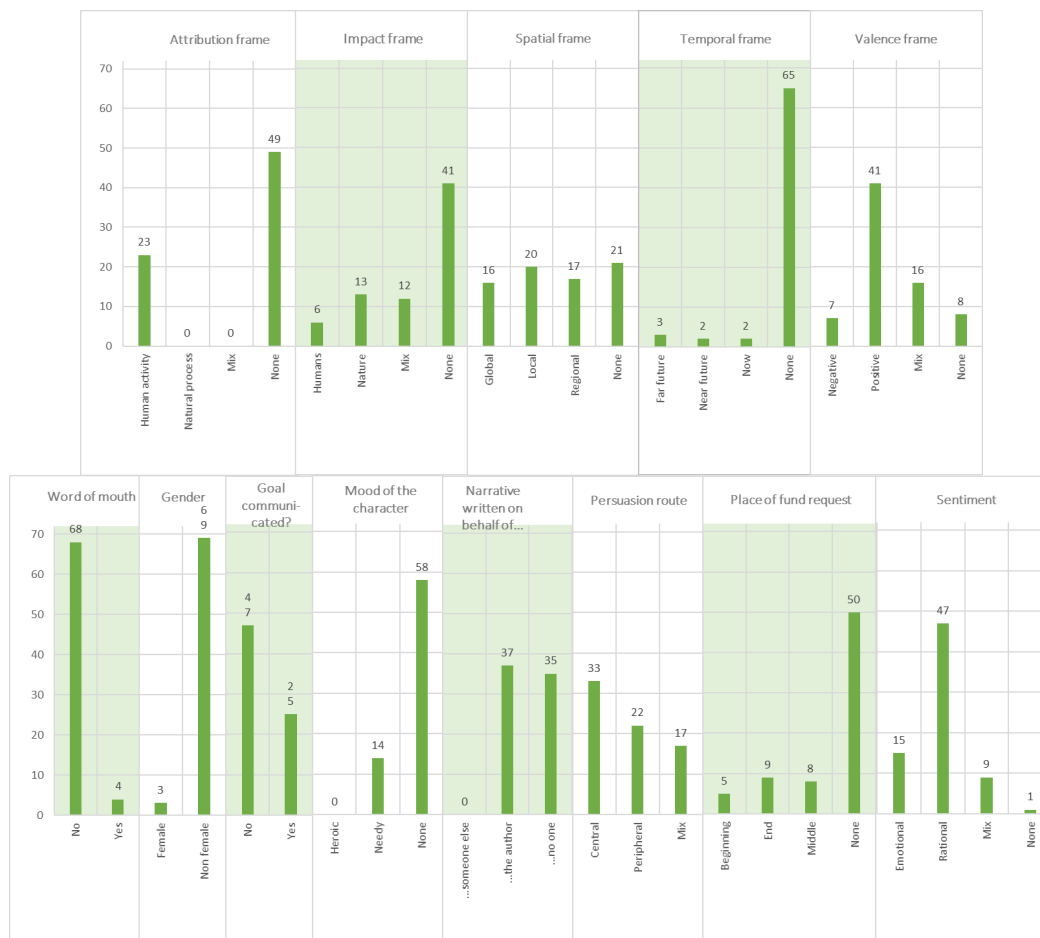
It is important to understand that this research will explore framing attributes in green technology crowdfunding narratives and does not get into the correlation analysis which should be done in complementary research.

Literature review as starting point

This exploratory research departs from combining two existing literature streams; 1. Crowdfunding narrative framing, and 2. Climate change narrative framing. A thorough review of these two streams resulted in two sets of framing attributes, which are shown on the horizontal axes of the figures below. From this part on, the research follows a provisional coding logic by Saldaña (2009). By using this logic, the provisional set of framing attributes that is based on the two literature streams is being analyzed in narratives of green technology crowdfunding projects.

Main analysis

Seventy-two green technology projects have been collected by means of diverse sampling. The data sample consists of project narratives from four countries; The Netherlands, Norway, the United Kingdom and the United States of America. Besides, all four types of crowdfunding models are represented in the data sample. By applying random sampling of the data sample is supplemented until a sufficient number of project narratives had been collected. As each narrative in the data sample ($N = 72$) is searched for the framing attributes as defined in the provisional list, a binary data set remains. A matrix with a 0 (present) or 1 (absent) for each framing attribute in each narrative. The results are shown in the figures below.



Based on these findings, the provisional list of framing attributes as extracted from the two literature streams is modified. The framing attributes that have been added are shown in the table below.

Framing attribute	Options	Description
Making a fund presented as...	...taking an opportunity	The author frames making a fund as taking an opportunity for potential backers instead of framing a fund as a favor
	...a favor	The author frames making a fund as doing a favor to the cause
	...paying-off a debt	The author frames making a fund as paying off a debt instead of making an investment or doing a favor
Risk communication	Yes	The narrative contains a detailed overview of all the risks involved when committing a fund
	No	The narrative does not contain a detailed overview of all the risks involved when committing a fund
Self-evident style	Yes	The author does not question and/or explain who is to blame for climate change as it is perceived as self-evident and obvious
	No	The author does question and/or explain who is to blame for climate change as it is not perceived as self-evident or obvious
Step-by-step plan of action	Yes	The narrative contains an elaborately explained step-by-step plan of action which the campaign attempts to follow
	No	The narrative does not contain an elaborately explained step-by-step plan of action which the campaign attempts to follow

Next to adding a number of new framing attributes, some existing framing attributes in the list are revised. The impact frame and the spatial frame have been revised by changing their definition to describe how these framing attributes have been applied by authors of green technology crowdfunding project narratives.

Lastly, some of the framing attributes from the provisional set should be deleted as these are not, or barely, applied in green technology crowdfunding. The framing attributes being deleted are *Word of Mouth*, indicating the author as female (*Gender*). Not a single narrative indicates to be written on behalf of someone else (*Narrative written on behalf of...*) despite being advocated in literature. In addition, none of the analyzed narratives framed climate change as being a natural process (*Attribution frame*), and only few mention when climate change consequences are about to happen (*Temporal frame*).

Cross-analyses

The purpose of the cross-analyses is to explore significant differences between variables of the two main characteristics of the crowdfunding models: country of origin and the underlying crowdfunding model. The reason for performing these cross-analyses is to gain a deeper understanding of how- and if narratives of projects with varying characteristics also vary in how their narratives are being framed by the authors. Two cross-analyses have been conducted; Cross-country analysis and cross-model analysis.

The results of the cross-country analysis show that the nationality of a green technology crowdfunding project is statistically associated with climate change being framed as a local, regional or global problem, and if those problems are occurring right now, will occur in the near- or in the far future. In addition, the nationality of a green technology crowdfunding project shows a statistical association regarding the funding goal being communicated or not, and whether the author attempts to persuade potential backers with a rational-, emotional-, or mixed sentiment.

The results of the cross-model analysis learn that the underlying crowdfunding model of green technology crowdfunding projects is probably associated with the way narratives frame who suffers most from climate change and whether authors of the narratives communicate negative language or positive language. In addition, the underlying crowdfunding model associates with whether authors include word of mouth, communicate their funding goal, how they frame the mood of the character, on whose behalf the narrative is written and what sentiment is applied to persuade potential backers.

Hypothetically, there is a diversity in climate change definitions by authors of climate change narrative framing literature. However, it is hard to investigate an authors' definition of climate change and whether it deviates from the definition being used for this research. Assuming that (some) authors of the to be reviewed literature define climate change as global warming caused by human activity, could affect this research's outcomes. This is because the projects in the data sample are collected by criteria based on a definition of climate change that goes beyond global warming only. On the other hand, the set of framing attributes that will be constructed are based on literatures written by authors with a different definition of climate change. To overcome this issue, a check will be made. This check is to see whether for this research it is relevant to make that distinction of varying climate change definitions. For executing this check, the crowdfunding projects in the data sample have been assigned to two different classes; On the one hand, there are projects seeking funds for a technology that *directly* attempts to mitigate or reverse global warming. Where on the other hand, there are projects seeking funds for a technology that attempts to mitigate, reverse, or solve other climate change-related issues, e.g. plastic litter in oceans. The results of this check suggest that narratives of green technology crowdfunding projects being directly counter-global warming are not framed differently, apart from framing who is to suffer most due to climate change.

Conclusion and recommendations

Since the narrative accounts for nearly all communication between entrepreneur and potential backer the main managerial recommendations are the following three; Firstly, CoolCrowd should perform several more empirical iterations of this exploratory study. In this way, a very accurate set of framing attributes for green technology crowdfunding, including frequency counts, are established. Secondly, CoolCrowd should build on these findings by performing a correlation analysis explaining the relation between utilization of specific framing attributes and fund-assembling performances. In this way, CoolCrowd can create a highly persuasive, and thus effective, narrative for their crowdfunding campaign. Thirdly, CoolCrowd should investigate how persuasiveness of specific framing attributes differ among diverse audiences. Hypothetically, each individual's decision-making process requires a different manipulation through narrative framing as deeper understanding about this would enhance persuasion power as well.

By combining this research's findings and by giving heed to the three recommendations, CoolCrowd, or any other instance or individual considering a green technology crowdfunding project, can be greatly effective by writing their narrative. Ultimately, this research forms the fundament for future ground-breaking green technologies contributing to our worldwide journey towards a sustainable future. For CoolCrowd's concern, that would mean to succeed in equipping Norwegian farmers with green technologies to mitigate the excessive greenhouse gas emissions by the Norwegian agricultural industry, by means of crowdfunding efforts. Perhaps, one day, Norway might be the example other national- or continental administrations need to follow. On to a sustainable future!

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1 INTRODUCTION

This Master Thesis derives from a personal interest and aspiration to contribute to a globally-scaled transition in which a sustainable society, economy, and future is created. As final chapter of the Master of Science (MSc.) program of Innovation Management at the Eindhoven University of Technology, hereafter called TU/e, it is aimed to be the clasp between the educational career and the start of a professional career, in which further contributions to that aspiration will proceed to be made. The research, embodying the Master Thesis, addresses the following core subject: *The exploration of message framing- and linguistic style composition in green technology crowdfunding narratives*. In the remainder of the Master Thesis, the joint term of *message framing attributes & linguistic styles* will be addressed as *framing attributes*. Before getting into detail regarding this subject, some context is discussed from which the research's focus has emerged.

The origins of the research depart from a perspective that coheres with the aspiration of giving rise to a sustainable future. Ever since the industrial revolution starting in the 19th century, the global CO₂-emissions have increased dramatically, resulting in an estimated average global temperature rise of 1°C annually (USGCRP, 2017). Greenhouse gasses are emitted excessively and are seen as the dominant cause of our globe's temperature rise. According to the world's leading independent conservation organization, the World Wildlife Fund (WWF) we, humans, have been living far beyond our means for over more than a century (WWF, 2018), exhausting the globe, impossibly being able to oversee all of its impacts. Although this is indeed happening on a daily basis, the main contributor to this unprecedented problem is the agriculture industry; This industry accounts up for approximately 24% of the global greenhouse gas emission (IPCC, 2014). Besides, it heavily disrupts ecological water systems and river channels from their pristine states (Moss B. , 2007), it often destroys nature and wildlife by the utilizations and disposal of pesticides and fertilizers (Conway & Pretty, 2013) and causes large-scaled soil erosion (Skinner, et al., 1997). Hence, mitigating the widespread pollution of this industry by introducing new environment-friendly technologies for farmers could be a big step towards a sustainable future.



Figure 1.1: A typical Norwegian farm

A project group that acknowledges the urgency of mitigating the agriculture's pollution, is CoolCrowd. CoolCrowd, a project consisting of an international and interdisciplinary research team, investigates the concept of installing and using climate-friendly technologies at

Norwegian farms. The project assesses the feasibility of financing these technologies by offsetting CO₂-emissions from transport by a large amount of individual (micro-)investors. The CoolCrowd-project is a three-year proof of concept study establishing the level of interest amongst the Norwegian public, the interest of farmers in partaking in this conceptual scheme, and exploring possible business models for local climate crowdfunding in Norway (COOLCROWD, 2018). A business model is defined as the heuristic logic that connects technical potential with the realization of economic value (Chesbrough & Rosenbloom, 2002), in this case for local climate crowdfunding for Norwegian farmers. One of the work packages of the CoolCrowd project is to research the performances and effectiveness of crowdfunding projects.

The very first page of the introductory chapter of this document already shortly introduced CoolCrowd. CoolCrowd is an initiative led by Ruralis, an institute that conducts rural and regional research located in Trondheim, Norway. Rather simplified, CoolCrowd strives for a low-emission society through crowdfunding. Today, early 2019, the project is still in its infancy, performing a three-year proof of concept study in Norway. Vastly internationally oriented, the project team is composed by member from all over the world; To illustrate its internationality, the team among others, consists of the University of Western Australia, University of Otago, and the Eindhoven University of Technology. Representing Norway in the team, many members find their origins in the University of Oslo, Western Norway University of Applied Sciences, Norwegian School of Economics, Norwegian Business School, or the Norwegian Centre for Organic Agriculture (NORSØK) (CoolCrowd, 2018).

CoolCrowd's ideology commences from the verity that *"An increasing number of companies offer carbon offsetting as mean of allowing the public to compensate for their use of fossil fuels."* (CoolCrowd, 2018, p. Background) The mission of CoolCrowd is to assess feasibility of offsetting CO₂-emissions from transport through crowdfunding of climate- friendly technologies on local farms. At this moment of time, CoolCrowd visions to formulate recommendations for implementing a locally crowdfunded climate project in Norway. This is done in three steps; Establishing the level of interest amongst the Norwegian public, the level of interest of farmer in partaking in climate crowdfunding efforts and exploring possible business models for local climate crowdfunding in Norway. This research finds itself in a phase where if crowdfunding allegedly to be a useful asset for CoolCrowd's goal, it is required to understand how the narrative should be configured to be most effective for getting environmental-friendly technologies installed on Norwegian farmers' soils.

1.1 Crowdfunding

Over the past few years, lots of so-called Web 2.0 technologies have been developed, enabling an evolution of new and innovative business models, in which the digital user plays an increasingly important role since the way goods are used and consumed have changed (Gierczak, Bretschneider, Haas, Blohm, & Leimeister, 2016; Moritz & Block, 2016). Crowdfunding is a forerunning example of such a Web 2.0 technology.

A vast number of crowdfunding definitions in all sorts of literatures are in existence. In essence crowdfunding comes down to the following principles; Through an open call on the internet, entrepreneurs, initiators, care-takers, activists, or any other individual with any kind of purpose, attempts to assemble capital by larger amounts of individual investments, to finance a particular purpose. Crowdfunding can be defined as a novel method for funding a variety of new ventures (Mollick, 2014), products, or (social) services through capital provision by a large number of (small) donations by individuals solely as gift, or in exchange for some form of reward (Schwienbacher & Larralde, 2012). This is done via an open call on the internet, relying on small investments of a larger audience rather than soliciting small volumes of

sophisticated investors (Belleflamme, Lambert, & Schwienbacher, 2014). It as well can be defined as a new method of financing, based on an intermediary (internet platform), which links backers or investors, who are ordinary people willing to invest small amounts into favorable projects, to entrepreneurs or start-ups, which usually represent brave new ideas and have problems with attracting finance using other ways (Jegeleviciutė & Valanciene, 2015).

Crowdfunding project could vary from financing a student's pizza, to gathering sufficient monetary supplies to finance a radical innovation's first prototype. Crowdfunding goes beyond the concept of crowdsourcing, in which the crowd is used for obtaining ideas, feedback, or solutions to develop corporate activities (Belleflamme, Lambert, & Schwienbacher, 2014; Kraus, Richter, Brem, Cheng, & Chang, 2016). Crowdfunding projects are usually exploited by crowdfunding platforms. Some platforms solely offer a stage to specific types of crowdfunding, or projects that serve a specific target segment. Crowdfunding takes form in four types; Reward-based, donation-based, lending-based, and equity-based (Belleflamme, Lambert, & Schwienbacher, 2013; Stanko & Henard, 2017; Giudici, Nava, Rossi Lamasra, & Verecondo, 2012). Each of the four different crowdfunding models will be explained below.

In many cases, investors, i.e. backers, receive some kind of return for their investment, whether by materialistic compensation, monetary reward or immaterial compensation e.g. in form of social acknowledgement (Vukovic, Lopez, & Laredo, 2009; Kazai, 2011; Kraus, Richter, Brem, Cheng, & Chang, 2016; Mollick, 2014). This is called reward-based crowdfunding. On the contrary, donation-based crowdfunding does not compensate any investments, and therefore investments are gifts or donations to the project initiator, and investors do not expect (material) rewards in exchange for their contributions (Giudici, Nava, Rossi Lamasra, & Verecondo, 2012). The third form of crowdfunding is lending-based. This model, as the name suggests, this is based on the provision of small loans by backers (Allison, Davis, Webb, & Short, 2017; Bruton, Khavul, Siegel, & Wright, 2015). Potentially, investors can earn a payment of interest, if this is contractually agreed upon prior to the lending (Kraus, Richter, Brem, Cheng, & Chang, 2016). Lastly, equity-based crowdfunding is known as a model in which investors, usually making larger investments, receive an ownership stake with the goal of profit sharing in the future (Stanko & Henard, 2017; Mollick, 2014; Kraus, Richter, Brem, Cheng, & Chang, 2016). An overview of the different crowdfunding models is shown in Figure 1.2 below.

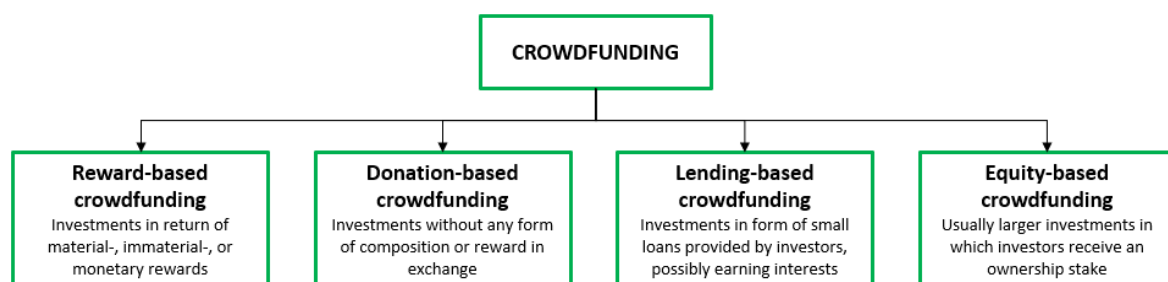


Figure 1.2: Overview of different crowdfunding models

1.1.1 Green technology crowdfunding

As communicated previously, the research does not focus on regular crowdfunding. At the very core of this research lays a more specific type of crowdfunding; green technology crowdfunding. Regardless the model substantiating a green technology crowdfunding project, projects included in this segment meet other standards. As the name suggests, projects gathering under this segment are crowdfunding projects assembling monetary assets to be utilized for creation, development, production, installation, or exploitation of green

technologies. Logically, it is necessary to subsequently gain an enhanced understanding of what exactly *green technologies* are. One of the largest and commonly known search engines on the internet provides the following definition, granted from Oxford University Press:

“Technology whose use is intended to mitigate or reverse the effects of human activity on the environment.” (Oxford University Press, 2018)

Although numerous other definitions can be found on the internet, the one mentioned above is considered to be most encompassing and including. Decomposing the above definition into distinct criteria is required to better understand green technology. At the outset, the definition is divided into three; The object (*Technology*), function (*to mitigate or reverse*) and application (*the effects of human activity on the environment*). Firstly, technology is known as a mass noun that includes anything that applies scientific knowledge for practical purposes; Or, otherwise, any craft, machinery or equipment developed from the application of scientific knowledge (Oxford University Press, 2018). Secondly, mitigating and reversing, both verbs; Mitigating is known as making something less severe or lessen the gravity of something, where reversing means to make something the opposite of what it was (Oxford University Press, 2018). The latter, the effects of human activity on the environment, is a rather broad phrase. By far the largest effects of human activity on the environment are the emissions of so-called greenhouse gasses. These gasses, e.g. Nitrous Oxide (N₂O), Methane (CH₄), and Carbon dioxide (CO₂), trap heat radiating from the Earth toward space, blocking heat from escaping (NASA, 2018). Next to air pollution, two other forms of pollution are commonly known: water- and soil pollution (Conserve Energy Future, 2018). Urban- or industrial wastes, e.g. plastics and chemicals, often end up in oceans, forests or other natural realms. Apart from pollution, a second and equally severe effect of human activity exists. Exhaustion of natural resources, animal habitats, or urgent chains in the ecological cycle is occurring on large scales (Brändlin, 2017). Aggregating the decomposition of green technology's definition, the following perception of the term is constructed:

Green technology implies any craft, machinery or equipment developed from applied scientific knowledge intended to lessen or to restore human activity-induced air-, water- or soil pollution, or environmental exhaustion.

Successively, green technology crowdfunding is any crowdfunding platform that intends to contribute to a green technology. Crowdfunding project initiatives appear in numerous fashions. Some projects seek capital to cover R&D expenses, where others assemble monetary resources to train employees to install new solar panels in rural areas. Nonetheless, for this research, projects are included that in any form contribute to a green technology.

1.1.2 A key to crowdfunding success

The impact of multiple features and the way an entrepreneur presents an initiative, project or business idea, aiming to solicitate sufficient funding through crowdfunding, is widely recognized by various studies (Calic & Mosakowski, 2016; Frydrych, Bock, & Kinder, 2016; Sauro, 2014). Narrative framing is called “the key” (Sauro, 2014) and “essential” (Frydrych, Bock, & Kinder, 2016) to crowdfunding success. Nonetheless, crowdfunding projects proved to be succeeding only in narrow margins and failing most of the time in the past decade (Mollick, 2014).

Entrepreneurs searching for capital aiming to develop a product or service in an online environment are communicating to potential funders mainly by written appeal. The written appeal accounts for far most of the interaction and the information absorbed by a potential funder; the interaction medium in crowdfunding is a computer-mediated and a-synchronous, such that potential funders make decisions in absence of face-to-face interactions (Gorbotai

& Nelson, 2015). The way a message is framed is consequential for decision-making (Rotman & Salovey, 1997). Hence, in a crowdfunding setting, the capital raised by inviting funders for a contribution to your enterprise, largely depends on the entrepreneurs linguistic presentation.

Ideally, a lot of knowledge is available about the correlation between how a written appeal is framed by the entrepreneur and (green technology) crowdfunding performances. To understand this correlation, prior research is required; The very first step would be to explore what framing attributes exist in crowdfunding narratives. This research attempts to cover this first step by exploring what framing attributes exists in green technology crowdfunding. Hence, this research does not investigate the correlation between narrative framing and crowdfunding performance.

1.2 Narratives

Throughout past centuries, the narrative entity has taken on three different modes; In the 16th century, a narrative was commonly seen as most basic formulation of (social) life. Later on, a narrative became a mode of knowing, in which it consisted of organizing experiences with the help of a scheme assuming the intentionality of human action. Subsequently, the mode of narratives became a mode of communication which is most commonly known in today's social order. This mode of narratives intent to tell stories to entertain, to teach, to learn or to give and ask for interpretation (Czarniawska, 2004). Contextually, this research converges to a more specific form of narratives. Narratives in the communication mode come in two forms; Stories and persuasive messages (Green & Brock, 2000). The latter is how in this research a narrative is conceptualized. In both crowdfunding and climate change communication, narratives are deployed to pursue targeted audiences.

1.2.1 Crowdfunding narratives

Entrepreneurs searching for capital in order to develop a product or service in an online environment are communicating to potential funders mainly by written appeal, through crowdfunding platforms. The written appeal accounts for far most of the interaction and the information absorbed by a potential funder; the interaction medium in crowdfunding is a computer-mediated and a-synchronous, such that potential funders make decisions in absence of face-to-face interactions (Gorbotai & Nelson, 2015). Complementary, the way a message is framed is consequential for decision-making (Rotman & Salovey, 1997). Hence, in a crowdfunding setting, the capital raised by inviting funders for a contribution to your enterprise, largely depends on the entrepreneurs linguistic presentation. In other words, effective communication is central to crowdfunding success, as funding decisions are made based on very limited amounts of digitally conveyed information (Parhankangas & Renko, 2017). Since any other individual would formulate a linguistic appeal in entirely different way, there are countless manners to do so.

1.2.2 Climate change narratives

Climate change has been one of the greatest issues of the 21st century so far, and is likely to continue to be. The past few years have already been subject to countless initiatives and programs aiming for climate change control or mitigation. With the Paris Agreement in 2016 as a very first official step towards a sustainable future, still a long way is to go. In the past decade, an increasing number of literature has been written on how to raise awareness among the public (Nerlich, Koteyko, & Brown, 2010) and how to get people involved in pro-environmental endeavors. To get engaged to a specific climate change action or initiative, many researches emphasize that the narrative told should be targeting someone's emotions to decrease psychological distance of climate change (Ramkissoon & Smith, 2014; Spence, Poortinga, & Pidgeon, The psychological distance of climate change, 2012; Jones, Hine, &

Marks, 2017). In addition, climate change's intangible nature often leads to a psychological distance for individuals (Morton, Rabinovich, Marshall, & Bretschneider, 2011). To minimize psychological distance, several framing attributes should be taken into account. In addition, in today's society, still a lot of confusion and contradiction on the climate change topic is present (Ereaut & Segnit, 2006), as shown in Figure 1.3. Therefore, people are possibly very divided in beliefs and trust about the issue, resulting in different audiences that should be treated in specific ways, accordingly.

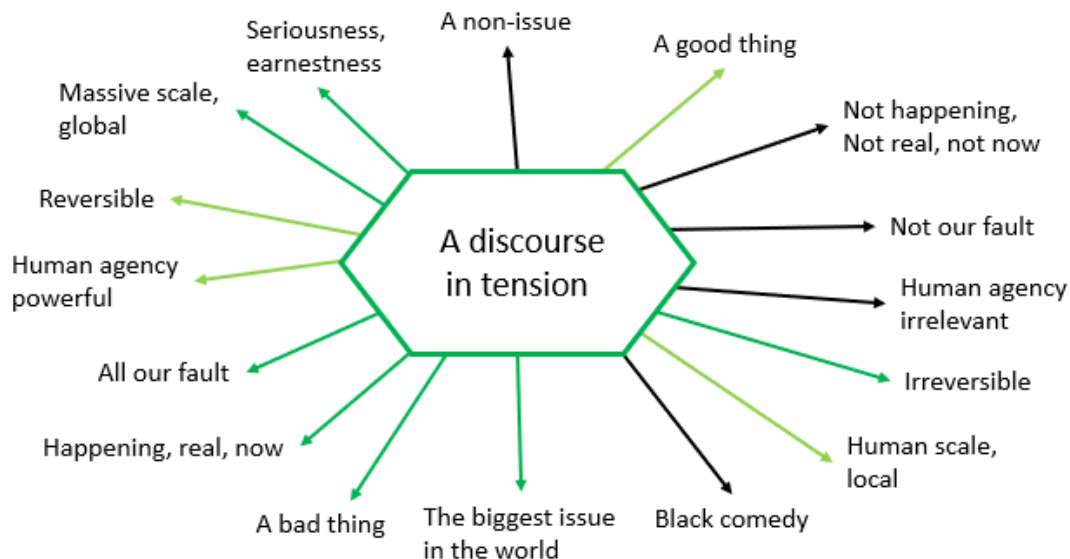


Figure 1.3: Contradictions in climate change beliefs (Ereaut & Segnit, 2006)

1.3 Agriculture

As previously explained, the research's context is directly linked to agriculture. The agriculture industry heavily contributes to greenhouse gas emissions. As vast part of this research's context, a brief introduction of agriculture is provided for informative purposes.

Agriculture is known as the science or practice of farming, including cultivation of the soil for growing of crops and the rearing of animals to provide food, wool, and other (side) products (Google Inc., 2018). As vital part of human existence, the agriculture industry is by far the main supplier of all our daily food. In total, the Earth's surface contains 43.7 million hectares of agricultural landscapes (Willer & Lernoud, 2016). Accountable for up to 24% of the global greenhouse gas emission (IPCC, 2014), the agriculture industry should go through a serious transformation. Occupying 37% of the earth's land surface, this industry emits 52% and 84% of all global Methane (CH₄) and Nitrous oxide (N₂O) gasses (Smith, et al., 2008). Adding up an expected global population growth, in 2050 there are approximately 9 billion mouths to feed (CropLife Australia, 2009). Taking into account this industry's polluting character, and an excessive expected growth this century's first half, it will bring about immense challenges toward a sustainable future of the agricultural industry. Since the research's connection with Norway, an overview of the agriculture industry in Norway is provided in Appendix A.

1.4 Research purpose and relevance

Alike regular crowdfunding, the means of which climate change communications are framed, is told to be one of the antecedents of the persuasiveness (Moser, 2016). Persuasiveness of climate change implies provoking people to not only adopt but also to take action against climate change e.g. by donating or funding green initiatives. The latter embodies the mutual

area of crowdfunding, and climate change. Gathering the mutual theoretical domains of crowdfunding narrative framing and climate change communication, under CoolCrowd's objective, this research attempts to explore existing message frames written by entrepreneurs seeking for capital assemblies for green technologies through crowdfunding platforms.

Combining the two theoretical domains of green technology crowdfunding narrative composition, leaves an unstudied theoretical gap; That is, the mutual area of climate change narratives and crowdfunding narratives has, up to this day, not been subject to research. Hence, this research is highly explorative in nature.

Concisely, this research brings up three different products to the table; Firstly, the research will expose which of the framing attributes from crowdfunding- and climate change message framing literatures is present in narratives of green technology crowdfunding. Secondly, this research studies if the presence of these framing attributes differs between subsets when dividing the set of narratives into classes based on three conjoined crowdfunding features: the country from which a project originates from, the underlying crowdfunding model (as shown Figure 1.2), and if a project is fighting global warming directly or fighting climate change in general, as defined in section 1.1.1. Finally, the research explores if, apart from the preliminary specified framing attributes, other framing attributes can be found and defined in the narratives of green technology crowdfunding projects.

This research's products attempt to provide several implications; Firstly, the practical implication of the research is to provide craft-improving insights for entrepreneurs assigned to compose a narrative for a green technology crowdfunding project. This in particular weighs for those at CoolCrowd whom assigned to compose the crowdfunding narrative for sustainable agriculture-technologies in Norway. Secondly, this research strives to supply academic implications by sealing the theoretical gap that was found in the literature review, prior to this research. Last but not least, this research stands as Master Thesis, hence, it purposes to obtain a Master of Science degree at the school of Industrial Engineering and Innovation Sciences.

1.5 Problem statement and research questions

As mentioned, the research departs from an observation that no single study yet has been researching message framing of green technology crowdfunding project narratives. Numerous studies have been found that spent great efforts in analyzing the presence of specific message framing in either one of the two subject areas, nonetheless, none have been studying the mutual theoretical domain. Hence, the focus of this Master Thesis will be on the overlapping area of climate change- and crowdfunding narrative message framing. This problem is illustrated in Figure 1.4 below.

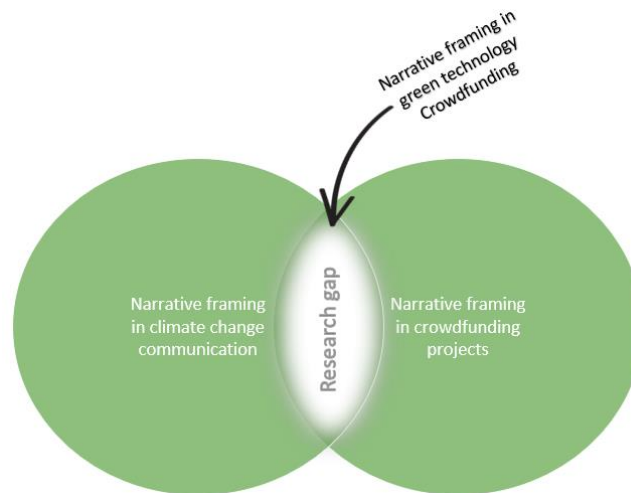


Figure 1.4: Illustration of the problem statement

Referring back to CoolCrowd's interests, the problem statement, directly relates to the crowdfunding project to be launched granting Norwegian farmers to install environmental-friendly technologies. The narrative that is to be written for the crowdfunding project requires fundamental insights on how to be truly persuasive. Therefore, the main research question (RQ) of the Master Thesis states:

RQ: *How do green technology crowdfunding projects founders frame their project's narrative to attract potential backers on online crowdfunding platforms?*

The research will be divided over five sub-questions (SRQs). In the following subsections these will individually be introduced. The methodologies applied for answering each SRQ will be explained later in the methodology chapter. In the following sections, each SRQ is explained individually.

Research sub-question 1

The research kicks off with the first SRQ; a literature review. As shown in Figure 1.4, this study combines two literature streams: Climate change narratives framing, and crowdfunding narratives framing. The product of the literature review will be a list of framing attributes extracted from both literature streams. Therefore, the first SRQ states:

SRQ1: *What framing attributes are found in climate change message framing- and crowdfunding message framing literatures?*

For extracting this set, the TU/e Library, Google Scholar, and ScienceDirect are used as main sources. The set of literature from these sources are supplemented with literatures provided by stakeholders of CoolCrowd and the TU/e. The created set of framing attributes based on the literature review will be used in the remaining SRQs.

Research sub-question 2

Prior to the analysis, a data sample is created, being a set of narratives of green technology crowdfunding projects. These narratives will be analyzed on configuration of the pre-established set of framing attributes. SRQ2 will be a content analysis performed by aid of an appropriate software package. This analysis will answer the second research sub-question that states:

SRQ2: *What framing attributes are found in green-/climate crowdfunding project narratives?*

Referring back to the research gap, this sub-question covers most of the untested mutual area of crowdfunding narratives and climate change narratives. Apart from exploring the configurations of these type of crowdfunding project's narratives, possible combinations of framing attributes will be tracked too. In this way, extensive insights are created that adds to the research's contribution to CoolCrowd, and science in general.

Research sub-question 3 and 4

The third and fourth part of the research are very much alike, as these sub-questions make an effort to explore significant differences between variables of the two main characteristics of the crowdfunding models: country of origin (nationality) and the underlying crowdfunding model. The reason for performing these cross-analyses is to gain deeper understanding of how- and if narratives of projects with varying characteristics also vary in how their narratives are being framed by the authors. Hence, the third research sub-question states:

SRQ3: *What differences and/or similarities in framing attributes can be found across the crowdfunding projects' countries of origin?*

In succession, the fourth research sub-question states:

SRQ4: *What differences and/or similarities in framing attributes can be found across different types of crowdfunding models?*

As an addition to the cross-analyses, each category i.e. country for SRQ3 and crowdfunding model for SRQ4, is compared to all three other categories. By doing so, the analysis goes one more step further into detail in understanding narrative framing in green technology crowdfunding.

Where for the type of crowdfunding merely four types exist, as shown in Figure 1.2, not every country in the world can be represented in the data sample. Arguably, China and the USA are by far the most prominent countries in exercising crowdfunding. For a lack of Chinese language-possessing, Chinese crowdfunding projects have not been taken into considerations, however, might be extremely interesting to be studied as well since it represents a vast share of the global crowdfunding market. Nonetheless, as of 2018, the USA reward-based crowdfunding transaction value stood at approximately \$655 million, accounting up for more than 12% of the global transaction values; \$5.2 billion (Statista.com, 2018). Initially, crowdfunding has emerged in both the USA and the UK (Langley, 2016). To the rear of China and the USA, the UK is the third largest crowdfunding nation with an estimated transaction value of \$70.2 million in 2018 for reward-based crowdfunding only (Statista.com, 2018). By including the USA and the UK in the analysis, both American and European crowdfunding is quantitatively represented properly. Next to these two western crowdfunding giants, the Netherlands is, debatably, knowns for its sustainable emphasis and innovative capabilities. Remarkably, despite the country's miniature soil size, two of the four world's largest green crowdfunding platforms are Dutch; Greencrowd (#1) and OnePlanetCrowd (#4) (Green Entrepreneurship, 2013). Additionally, this research has vast Dutch relations and is therefore specially interesting to be further investigated. Finally, as explained some occasions before in this report, CoolCrowd finds its origins in Norway. Norwegian crowdfunding is still in the primary stages of development. A statistic that proves crowdfunding has just begun to exist in Norway in recent years, is the number of mentions of the word *crowdfunding* in Norwegian media, as shown in Figure 1.5. From a Norwegian perspective, it is therefore appealing to be included in the data sample, since comparing the configuration of green technology crowdfunding narratives with crowdfunding giants and green innovation experts could be very rewarding.

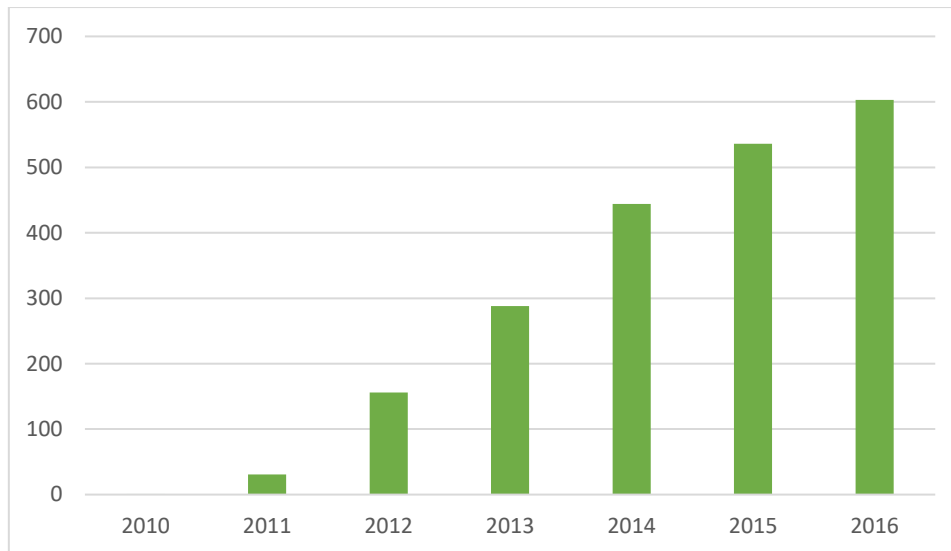


Figure 1.5: Mentions of crowdfunding in Norwegian media per year (Lund, 2017, p. 62)

After applying divers sampling to include all categories of crowdfunding models and selected countries, random sampling is applied to fill the data sample. Unfortunately, it has not been possible to collect data for each category. As shown in Table 2.2 no decision-based projects from Norway have been found. In addition, no lending-based projects from Norway and the United States of America are not present in the data sample. For the latter this was because the required qualifications for access to platforms having such projects are not possessed. Norwegian donation- and lending-based projects simply have not been found because these do not seem to exist.

Ultimately, the data sample is divided into two for the last SRQ. The last SRQ explores the framing attributes in narratives of projects that directly attempt to mitigate, reverse, or solve global warming, and projects that do not. All projects making it through the inclusion criteria in Figure 2.3 are either one or the other. As explained previously, this research defines *climate change* broader than a rise in global temperature solely. Climate change in this research means pollution or exhaustion of the environment, being all earth's atmosphere, waters, and soil. Global warming is caused by emission of greenhouse gasses, and, indirectly, deforestation (WWF, 2018). Therefore, for this research, projects categorized as *directly attempting to mitigate, reverse, or solve global warming* are projects that oppose emission of greenhouse gasses through their technology.

By means of these two sub-questions, this research becomes one layer of detail deeper in exploring message framing attributes used in narratives of green technology crowdfunding projects. Performing both a cross-country- and a cross-model analyses will provide a more sophisticated perspective in understanding the application of various framing attributes. Moreover, it enhances practical implications for CoolCrowd as it provides a two-way insight in what narrative configurations are most common both country-wise and model-wise, on which CoolCrowd could possibly base future decisions upon.

Research sub-question 5

Green technology crowdfunding is the main subject of this research. As explained, narrative framing of this type of crowdfunding is a combination of crowdfunding narrative framing, and climate change narrative framing. However, the latter requires some additional attention. Hypothetically, the term *climate change* might be subject to divers meanings or definitions. If true, this likely also counts for the authors of climate change narrative framing literatures. Consequently, the literatures that will be reviewed later on in this research could address

climate change in two different ways; The first definition of climate change might be as defined in section 1.1.1. That is, human-induced air-, soil-, water pollution and environmental exhaustion. The alternative definition of climate change is narrowing the concept down to global warming caused by human activities only.

This diversity in climate change definition by authors of climate change narrative framing literature is hypothetical. It is hard to investigate an authors' definition of climate change. Assuming that (some) authors of the to be reviewed literature define climate change as global warming caused by human activity, would affect this research's outcomes. This is because the projects in the data sample are collected by criteria based on a definition of climate change that goes beyond global warming only. On the other hand, the set of framing attributes that will be constructed are based on literatures written by authors with a different definition of climate change.

To overcome this issue, a check will be made. This check is to see whether for this research it is relevant to make that distinction of varying climate change definitions. For executing this check, the crowdfunding projects in the data sample will be assigned to two different classes; On the one hand, there are projects seeking funds for a technology that *directly* attempts to mitigate or reverse global warming. Where on the other hand, there are projects seeking funds for a technology that attempts to mitigate, reverse, or solve other climate change-related issues, e.g. plastic litter in oceans. The fifth and last SRQ embodies the check and states:

SRQ5: *What differences and/or similarities in framing attributes can be found across projects directly attempting to mitigate or reverse global warming, and projects that are not?*

1.6 Personal motivation

The nature of pro-environment commitment can perhaps be explained by my roots. As proud Dutchman, the battle against water is in my DNA. More specifically, as Dutchman from Zeeland, living amid structures that defend our cities and lands from rising sea levels, the direct and indirect effects of rising sea levels were understood by young age already. Besides, animals, nature, and all others our globe naturally offers us, is and has always been one of my biggest interests. Hence, climate change and all contributing to this, including my own Western lifestyle, is perceived a dreadful threat. Personally, I am convinced that technological solutions are either already available, or close to disclosure, but that society and economy require to foremost development. I belief that CoolCrowd and its representatives share the commitment to deliver in a next step in this development. Additionally, as latest generation of a family with a long-going farmer background, the context of CoolCrowd stretches to my personal roots. Since larger parts of air pollution comes from the agriculture, I feel this project fits me well by being able to contribute, to some extent, to a solution to that problem. From an academic point of view, performing an exploratory qualitative analysis is something I prefer to do. This research, in my opinion, is truly relevant in multiple dimensions and so its sets out a strong rationale for me individually.

1.7 Chapter closure and introduction to the next chapter

In this chapter an introduction is provided on the research origins, context, and how the subject came to be the subject of the Master Thesis. With the problem statement defined, the research (sub-)questions have been formulated that commonly intent to solve the stated problem. In the next chapter, an elaborate overview is given on the research design and -structure, and by which means and methodology the data in the sample is collected, and the analyses are executed.

2 RESEARCH DESIGN AND METHODOLOGIES

Essential for any research to be conducted is a thoroughly designed research outline specifying the applied methodologies. These methodologies are the tools used for execution of the research design, being the data collection, data preparation, working-out of the analysis, and any other activity up to research completion.

2.1 Research design

The research's exploratory nature means that it will follow an inductive approach which is regularly used in exploratory and qualitative research (Sekaran & Bougie, 2016, p. 26). Instead of a research design that defines and tests preconceived hypotheses, inductive research takes empirical phenomena as a starting point and seek through the process of research and analyses to generate broader theories. Thus, inductive research seeks to build new theories from data rather than testing existing hypotheses (Gilbert & Stoneman, 2008), and is therefore not reliable on hypotheses as starting point (Kovács & Spens, 2005). The framework of inductive research contains three main steps, defined by Kovács & Spens (2005) . These are shown in Figure 2.1.

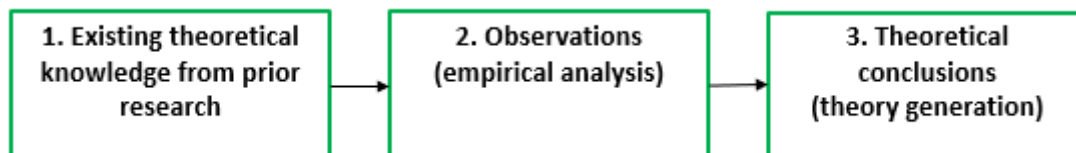


Figure 2.1: Inductive research process

Existing related theoretical knowledge is collected. In this research's context that is the collection of framing attributes from prior research, being crowdfunding message framing, and climate change message framing. Thereafter, the theoretical knowledge – the provisional set of framing attributes – is empirically analyzed on narratives of green technology crowdfunding projects. The observations resulting from the empirical analysis embody the input for new theory generation. Conclusions on the newly generated theories will be the product of this exploratory inductive research. Consequently, this Master Thesis attempts to fill the theoretical gap found by the literature study and will draw conclusions on what framing attributes are used in green-/climate crowdfunding project narratives.

The execution and reporting of this inductive research follow a lucid sequence. This sequence is illustrated in Figure 2.2. The same figure additionally indicates what part of the research addresses what SRQs and the RQ.

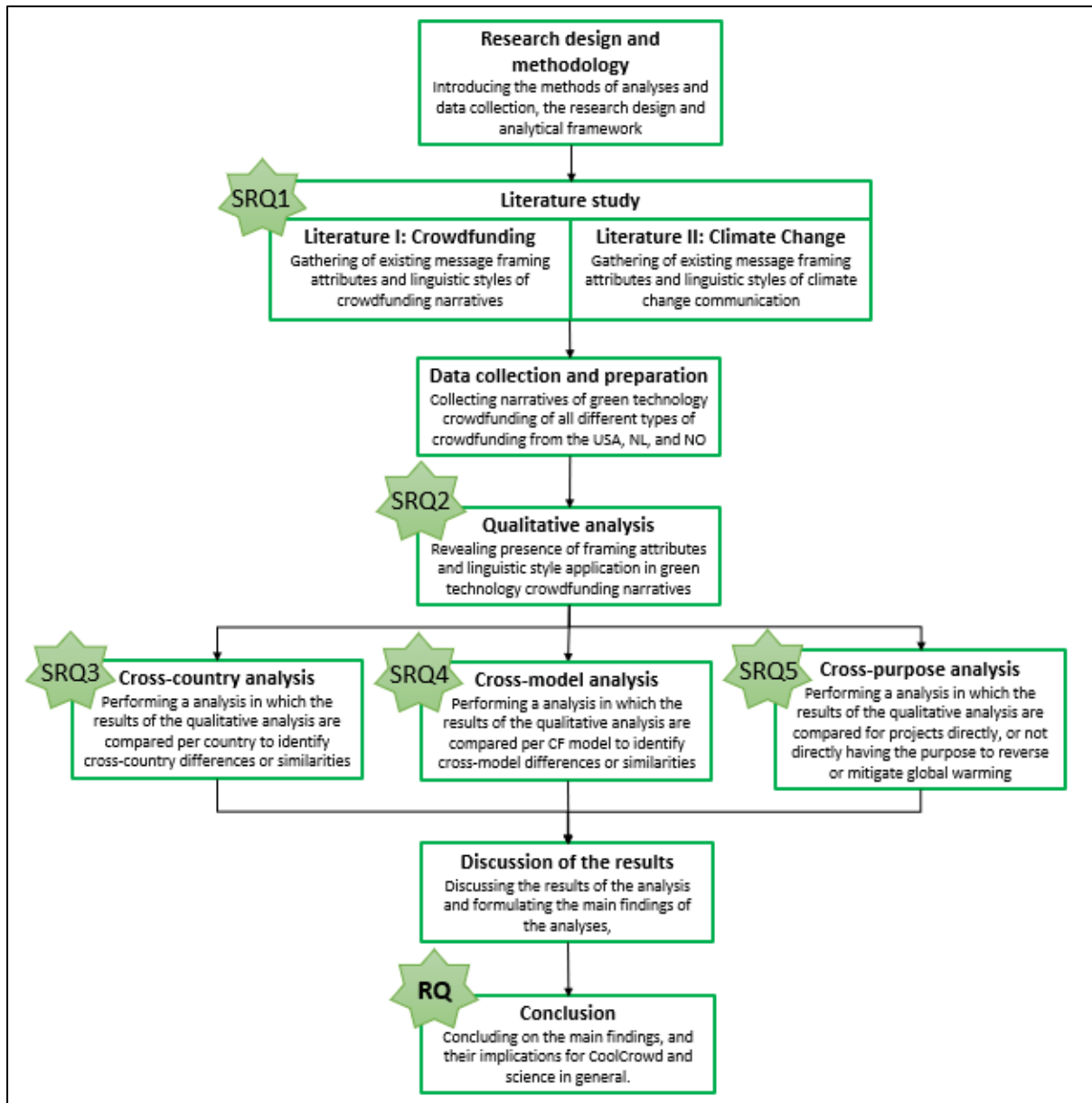


Figure 2.2: Structure of the Master Thesis' research

2.2 Research methodologies

The overall methodological approach of the research is qualitative and exploratory. However, in the following sections the methodologies that have been applied for this research are explained. This will be done for each SRQ individually.

2.2.1 Methodologies for SRQ1

For properly reporting the to be applied methodologies for the first SRQ, a quick reference back to the research question is made. Initially, a theoretical research gap was identified in which no study has ever researched the presence or absence of framing attributes in narratives of green technology crowdfunding projects. To construct a proper literature review, a strategy was set out.

The first step in this strategy is to determine what literature to include. Critical to a literature review is the coverage of literature in a specific field of research. One way could be to “exhaust” the review i.e. locating and considering every available piece of literature in that

field. Since both climate change- and crowdfunding narrative framing are very large concepts, and time is limited, this is beyond feasibility. Therefore, a preselected set of articles by the TU/e supervisor and the CoolCrowd team are seen first. This list of literature is expanded with additional articles with selection criteria of “the younger the better”, and being central and pivotal (e.g. high number of citations). Thus, a mixed coverage method of selective exhaustion and purposive method (Randolph, 2009) is applied for conducting the literature review. Google Scholar and ScienceDirect have been used as search engines for expanding the list of preselected literature. When a relevant article is found or given, both forward and backward citations are looked through, attempting to find related literature that might be of relevance to the review as well. The reviewing of the two theoretical streams also differ slightly in literature inclusion.

For the first stream, crowdfunding narrative framing, the search criteria have been narrowed down to articles explicitly focusing on narratives and message framing in the crowdfunding environment. Endless studies have been performed on the perfect message and content recipe to influence an audience’s decision-making towards desired direction. However, including them all would be far beyond limits of time and beyond the aim of the literature review. In addition, since crowdfunding is a relatively young phenomenon the reviewed articles are younger too; Hence, for this lens the amount of citations an article has gained is not decisive for inclusion.

Secondly, climate change narrative framing is more squeezed out in the academic world. Lots of researches have been done on narrative framing from getting the issue acknowledged to getting people engaged and many more. For this literature study, the background of the research and its relation to crowdfunding is maintained. That is, literature that will be included are studies focusing on narrative framing towards individuals (as is the case for crowdfunding) instead of a focus on certain industrial sectors or commercial parties. Finally, this study will exclude exploratory researchers that only make claims on what message framing is currently used. Instead, analytical studies are included, as they provide evidence of effects of specific message frames.

After the literature review is done, a summary on the findings will be formulated. The findings will be embodied by a set of framing attributes. Important to understand is that these framing attributes are *based upon* the literatures writing about climate change- and crowdfunding narrative framing. It does not necessarily mean that a framing attribute in this set is literally duplicated from the reviewed literatures but rather inspired by reading through the literature. With the set of framing attributes at hand the first part of the analyses will be executed.

2.2.2 Methodologies for SRQ2

For executing the first part of the analyses two things are required; Firstly, the provisional set of framing attributes as result of the literature; And secondly, a data sample consisting green technology crowdfunding narratives. Before getting into the procedure of sampling green technology crowdfunding, it should be determined when a crowdfunding project can be classified as a *green technology crowdfunding project*.

Data collection and preparation

For doing so, several criteria should be met. These criteria have been put together in a decision tree as shown in Figure 2.3. The first criterium is that a project’s purpose should be carefully gone over. For this research, a project’s purpose should be to contribute to a green technology in any form of research, creation, development, manufacturing, training, building, or installation. Previously in this document, a comprehensive definition has been created for green technology. According to that definition the object that a project regards should be any craft, machinery or equipment developed from applied scientific knowledge. Plus, the function

of that very objects should be intending to lessen, make less severe, or restore human activity-induced air-, water-, or soil pollution, or environmental exhaustion.

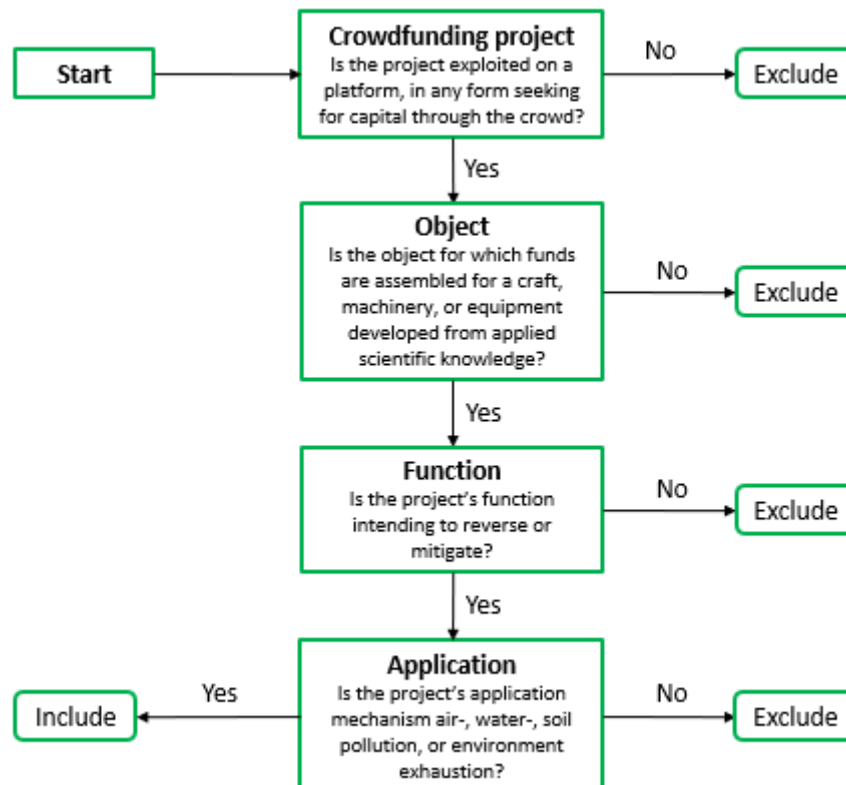


Figure 2.3: Project inclusion decision tree

The figure above would suggest random sampling of any project that makes it through the inclusion criteria. However, the method for collecting the narratives depends on another aspect of this research. For the third- and fourth SRQ the data sample requires division based upon the country a project originates from and the underlying crowdfunding model. Therefore, the sampling method is not entirely random; Projects that fit the criteria are sampled using diverse sampling, which is typically used when diversity between subsets is sought, as suggested by Seawright and Gerring (2008). These authors advocate the use of diverse sampling when the diversity of the data may be calculated by categorical values in exploring new phenomena (Seawright & Gerring, 2008, p. 297). By doing so the data sample will include projects from each selected country and with each underlying crowdfunding model.

Ideally, each country and crowdfunding model type is equally represented in the data set. The first step to acquire proper online crowdfunding platforms is reviewing an on beforehand set up overview of crowdfunding platforms containing green technology projects by a co-student, as well working for CoolCrowd. Secondly, more elaborately searching for crowdfunding platform selection is done by simply entering search strings in an online search engine: “*top crowdfunding platforms <for each country>*” and “*top green crowdfunding platforms <for each country>*”, providing thorough inclusion of existing and most commonly used platforms. Additionally, to include niche crowdfunding markets, e.g. *Norwegian equity-based crowdfunding*, the networks of the TU/e- and CoolCrowd supervisors are consulted since these networks possess a vast amount of knowledge and experience in this field of research, adding important value to this research’s completeness. Table 2.1 displays all platforms that have been selected per source, for further data collection. Some platforms were indicated by

more than one source (e.g. Kickstarter), obviously these are not screened more than once in the search for appropriate projects.

Table 2.1: Overview of selected crowdfunding platforms per source

Overview by fellow student	Google; search string: “top crowdfunding platforms <country>”	Google; search string: “top green crowdfunding platforms <country>”	Additional platforms acquired through CoolCrowd and University networks
Abundance	Kickstarter	GreenCrowd	FolkInvest
Ecocrowd	IndieGoGo	GreenUnite	CollinCrowdfund
OnePlanetCrowd	Patreon	GreenFunder	Symbid
JustGiving	Crowdwise	OnePlanetCrowd	Chuffed
GreenCrowd	Razoo	The Green Crowd	CrowdCube
Barnraiser	Crowdfunder	Greenvolved	Re-Volv
Kickstarer	Give		CollectiveSun
GreenRocket	GoFundMe		Sunfunder
Econeers	FolkInvest		Republic Geostellar
StartSomeGood	WeFund		Mintos
Bidra			Twino
DonorsChoose			
The Local Crowd			
Fundable			
Invesdor			

The sampling procedures are applied on the selected crowdfunding platforms. Platforms that ultimately provided projects for the data sample are highlighted in grey, in the same table below. The data sample now consists of narratives with a composition in terms of nationality and underlying crowdfunding model as shown in Table 2.2.

Table 2.2: Data sample per category

	DBC	EBC	LBC	RBC	Total
NL	3	1	11	6	21
NO	0	4	0	5	9
UK	5	4	8	8	25
USA	5	2	0	10	17
Total	13	11	19	29	72

The extraction of the narratives requires some final preparations before the analyses can be performed. This extraction means the collection of the narrative from the platform on which the green technology crowdfunding project is exploited. Clearly, no platform looks the same and each outlines different features. However, for all selected platforms, the core of the webpage is a piece of plain text, sometimes including pictures, explaining the cause for which donations, loans, or equity is sought. It is this part of the platform’s display, including the

images shown on the webpage, that are being collected for the analyses. In some cases, the page of a project includes additional information, e.g. links or videos, separately from the narrative's outline. These will not be collected and included in the sample. The underlying rationale for this decision is to enhance the data sample's uniformity, despite the vast diversity hidden in all platform's interfaces. Besides, analyzing video content requires different techniques and do not fit in the research scope. Though, for future research it can be relevant to research video content as well if the required time and skills are at hand. For each project in the data sample, the textual narrative and, if applicable, images are copied to a MS Word file. Each selected project from the data sample has now an individual file, collectively stored into the research's database. An overview of the collected projects is shown in Appendix B. In addition, each MS Word-file is given a title that is constructed based on the platform it comes from, its nationality and its underlying crowdfunding model. This is illustrated with an example in Figure 2.4. The abbreviations used for construction of the data titles are shown in Appendix C.

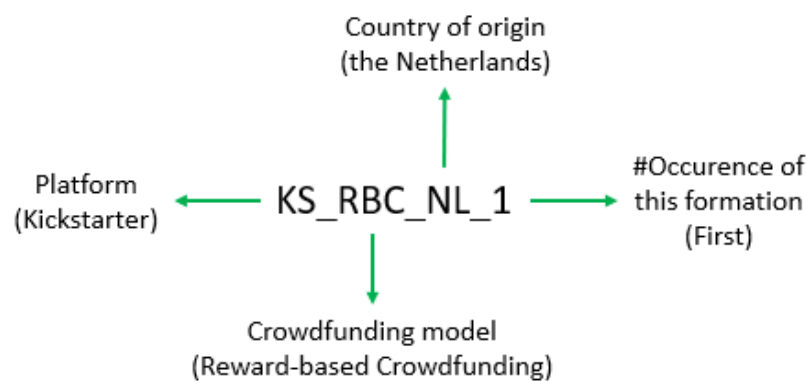


Figure 2.4: Setup of data title formation

Some descriptive statistics of the data sample is now shown to provide insight in the dimensions of the green technology crowdfunding projects only. No further analyses have been conducted on these numbers as these are meant informative only.

From the seventy-two projects in the data sample only one project does not specify its funding target and how much has been funded, as on November 18th, 2018. The projects differ much in terms of the established funding target ($\sigma = \text{€}1,376,181.48$) as the average funding target is $\text{€}626,178.96$. The largest funding goal in the data sample is $\text{€}4,935,480.00$ and the lowest is set on $\text{€}300.00$. Of all projects from platforms that display the number of backers the average number of backers is 54 ($\sigma = 78.39$). 64% of the projects in the data sample did not manage to reach their funding target.

Since four different country-origins are embedded within the data sample the monetary values originally were published in other currencies. The numbers mentioned above have been converted to Euros (€) with the following exchange rates, using an online conversion calculator on XE.com (XE.com Inc., 2018):

Table 2.3: Retained currency exchange rates as of November 16th, 2018 (XE.com Inc., 2018)

Original currency	Country	Exchange	Rate
USD (\$)	United States of America	USD to EUR	1 USD = 0.882878 EUR
GBP (£)	Great Britain	GBP to EUR	1 NOK = 0.103997 EUR
NOK	Norway	NOK to EUR	1 GPB = 1.12170 EUR

Analysis procedure

By having both the provisional set of framing attributes, and the data sample available and prepared the analysis can start. The next sections will explain what methodologies and procedures will be followed for the execution of the analysis. The goal of the analysis of SRQ2 is to identify presence of the predetermined framing attributes. In general, qualitative research deploys analytical constructs that are derived from either existing theories and practices, the experience or knowledge of experts, or previous research (Krippendorff, 2004; White & Marsh, 2006). Qualitative content analyses hold the objective to capture the meanings, emphasis, and themes of messages and to understand the organization and process of how they are presented (Altheide, 1996).

Throughout the qualitative part of the research a provisional coding approach is used. Provisional coding establishes a predetermined set of codes prior to the coding efforts (Saldaña, 2009). The set of codes is extracted from literature reviews related to the study's field of research. However, since narrative configuration of green technology crowdfunding projects is still to be researched, literature for green technology crowdfunding narratives specifically does not exist yet. As will be more explained in chapter 3, two literature streams are combined to create the provisional set of codes; *Crowdfunding* and *Climate change communication*. To ultimately end up with proper findings of applied framing attributes in green technology crowdfunding narratives, the provisionally list of codes might be revised, modified, or deleted. Moreover, the set of codes might be expanded with additional codes found in the data sample, that did not occur in the provisional list (Saldaña, 2009). As the provisional set of codes is created, the narratives of selected crowdfunding projects should be analyzed on presence or absence of these codes, being the framing attributes. The challenge is to manage the identification of these attributes in a piece of text. To do so, open analyses is applied, as described by Blumberg, Cooper & Schindler (2011), in which the researcher identifies themes and topics (in this case framing attributes) in the sources material.

As each narrative in the data sample ($N = 72$) is searched for the framing attributes as defined in the provisional list, a binary data set remains. A matrix with a 0 (present) or 1 (absent) for each framing attribute in each narrative. The software that will be used for executing the qualitative analysis is NVivo 11. Apart from having free access through a TU/e-license, this software is perfectly fit for this research. NVivo, is great for qualitative content analysis as these types of research often rely on annotation aids. NVivo allows these annotation aids, and in addition allows for storage of not only textual data, but also images and other media (White & Marsh, 2006). The program is capable of convenient facilitation of human coding of electronic data and directly involved in analyzing the document, matching terms to an beforehand set up coding scheme, and coding the data (White & Marsh, 2006). The software for performing all calculations in the analyses are MS Excel and IBM SPSS Statistics 25.

For each framing attribute a total count (X) is calculated to find out how many narratives in the sample contain a specific framing attribute. Upon the count (X) conclusions can be drawn for the second SRQ, since the count for each framing attribute shows how the narratives of green technology crowdfunding projects are framed. Ultimately, conclusions will be drawn upon these observed frequencies.

Validity and reliability

The conduct of a qualitative analysis is very much exposed to subjectivity, which is practically inevitable. In a publication to enhance credibility in qualitative research, Patton (1999) claims that human perception is highly selective, adding that each occasion, looking at the same scene, design, or object, different people will see different things. The researcher is the most important tool in qualitative research, and therefore the researcher's background,

environment, education, biases, and even the upbringing as a child, affect what the researcher sees during a study. During a sophisticated literature study prior to this research, the researcher has gained a vast understanding of the subject, and each code, as all are extracted from over studying 60 related published articles in this field of study. In this way, credibility is tried to be sustained throughout the entire research process.

Apart from the researcher's personal influences, a researcher takes on a lens; A lens in this context means a viewpoint taken on for establishing validity on a study. Combining this with Patton's (1999) claim that each observation might be perceived differently, this research will fully observe each narrative in the sample three times. Such a multi-lens approach is recommended to facilitate the research's internal validity (Patton, 1999). Each project narrative is first read through once, before coding the narrative. Secondly, solely the crowdfunding framing attributes (see Appendix D) are coded by going through the entire narrative again. In direct succession, the narrative is again seen through while coding the climate change framing attributes (see Appendix E) to each narrative. Another technique for increasing the research's credibility is to apply double coding. However, due to limited available time for the research, this technique will not be applied.

2.2.3 Methodologies for SRQ3-5

The third-, fourth- and fifth SRQ are identical to each other in terms of method and procedures. A cross-analysis will be conducted in each of these SRQs based upon a different division in subsets; A cross-country analysis, cross-model analysis and a cross-purpose analysis. For these cross-analyses the data sample is split into a subset for each category. These are shown in Table 2.4.

Table 2.4: Subsets per cross-analysis

Analysis	Subset 1	Subset 2	Subset 3	Subset 4	Total (N)
Cross-country analysis	The Netherlands $N_{NL} = 21$	Norway $N_{NO} = 9$	United Kingdom $N_{UK} = 25$	United States $N_{USA} = 17$	72
Cross-model analysis	Donation-based $N_{DBC} = 13$	Equity-based $N_{EBC} = 11$	Lending-based $N_{LBC} = 19$	Reward-based $N_{RBC} = 29$	72
Cross-purpose analysis	Direct $N_{DI} = 33$	Not direct $N_{ND} = 39$	-	-	72

Part 1 of the cross-analyses

The cross-analyses attempts to explore the differences in narrative framing between each of the categories of country, crowdfunding model and purpose. However, only statistically significant differences will be discussed. For testing a statistically significant relation an appropriate test should be selected. It is important to understand that selecting the right test is depends on two things; The scale of measurement of the data, and the purpose of the research (McCrum-Gardner, 2008). The data that will be tested is measured on a nominal scale. The purpose of this research is to compare four independent groups. Combining these facts, McCrum-Gardner (2008, p. 40) and McHugh (2013) claim that a χ^2 test of independence is the correct test to apply.

The χ^2 test is ideal for studying groups that are unequal in size and measured in nominal variables. Both are true for the analyses in this research. In addition, the χ^2 test is robust with respect to the distribution of the data and it does not require equal variances among the

studied groups (McHugh, 2013), and an appropriate method for testing differences in proportions (Fisher, Marshall, & Mitchell, 2011).

So, the χ^2 is calculated to find out if the nationality, underlying model, and purpose of a crowdfunding project makes a difference in how the narrative is framed. For each framing attribute shown in Appendix D and E, the χ^2 is calculated by the following formula:

$$\chi^2 = \sum_{i,j} \frac{(X_{i,j} - E_{i,j})^2}{E_{i,j}}$$

Where $X_{i,j}$ is the observed count per subset i for framing attribute j , and $E_{i,j}$ is the expected count per subset i for framing attribute j , calculated via:

$$E = \frac{(M_i \times M_j)}{N}$$

Where M_i is the row marginal for each subset, and M_j is the column marginal for each framing attribute, and N represents the total population size which is 72, since the total data sample includes 72 narratives. The χ^2 for each option per framing attribute is summed which results in the χ^2 statistic for a framing attribute. The null-hypothesis (H_0) when performing a χ^2 test is that there is no significant difference in message framing between samples with a different nationality, underlying crowdfunding model, or purpose. Whether to accept or reject with the observed χ^2 statistic, depend on two things; Firstly, the degrees of freedom (df). The df is calculated by:

$$df = (number\ of\ rows - 1) \times (number\ of\ columns - 1)$$

Secondly, the significance of the observed χ^2 statistic depends on the confidence interval. With the df and the confidence interval, one can find the critical value in a χ^2 -table, which can be found in every statistics book such as the TU/e Statistical Compendium (van Berkum & Di Bucchianico, 2016). The confidence level that is set for the analysis is 95% (McCrum-Gardner, 2008), meaning the critical p-value = $1 - \alpha = 0.05$. If the corresponding p-value for the observed χ^2 and df is lower than 0.05, the H_0 is rejected, concluding that there is a significant statistical association between a crowdfunding project's nationality, crowdfunding model, or purpose and the way each framing attribute is applied.

In essence, the χ^2 test of independence is a goodness of fit test. Therefore, this test is a one-sided test and not a two-sided test. Logically, when comparing narrative framing of projects e.g. per country, the outcomes cannot be too similar. Therefore, only the right side of the χ^2 probability density curve is relevant in this research's context.

Part 2 of the cross-analyses

Now after it is determined if a project's nationality, underlying crowdfunding model or purpose in general is found statistically significant associated to a narratives message framing, the second goal of the analysis can be performed; Comparing each subset to one another per cross-analysis to see where significant differences can be found. Again, it is important to understand that nominal data is measured and the groups are independent to one another. Therefore, the same the χ^2 test of independence is repeated for each combination of countries, models and purposes. The results of these tests reveal for each combination what framing attributes are significantly framed differently. To further discuss the meaning of these results, the percentual presence of *only the significant* framing attributes per combination are compared. The percentages ($X_{\%i}$) are calculated by dividing the counts (X_i) by the size (N_i) of each subset, since the sizes of the subsets are unequal.

Thereafter, the difference in percentage between each subset is calculated. So, each subset has a count transformed into a percentage ($X_{\%i}$) per option in a framing attribute. Then, each subsets' $X_{\%}$ is subtracted by the $X_{\%}$ of the other subsets, leaving a difference ($\Delta_{\%}$) in percentual presence of options in all framing attributes among the subsets. In this way, conclusions can be drawn upon how countries, crowdfunding models and purposes differ between each category.

2.3 Chapter closure and introduction to the next chapter

This chapter has provided a clear outline of the research design, structure and, at last, all required information on how what methods, techniques, tools and means are to be applied for the analyses in the next chapter. The next chapter will take the reader into the theoretical foundation on which the research and its analyses will be based upon. The theoretical part will review literature of two separate streams: Framing attributes of (1) Crowdfunding narrative framing, and (2) Climate change narrative framing.

3 LITERATURE STUDY

This chapter reports the results of a literature review that is done to establish a provisional set of framing attributes. A total number of 53 articles have been reviewed to realize the set of framing attributes on which the analyses later on in the research will use. The articles being reviewed have made claims about what framing attributes have been applied in message framing.

Decomposing a message, one could see it relies on a structure or configuration of attributes (Reese, 2007). The shape or reshaping of such a structure, is called framing. Message framing is known as the combination of integration of message-relevant information into a unitary (Maheswaran & Meyers-Levy, 1990), and it is guided by a combination of cognitive, constructive, and critical perspectives (D'Angelo, 2002). Alike framing attributes, messages convey specific word-use in an attempt to evoke or transport desired persuasiveness. Similarly, to the way individuals speak or write and its relation to their identity, a persuasion message holds identical linguistic styles to achieve its intentions (Pennebaker & King, 1999). Within the theoretical domains of crowdfunding narratives and climate change narratives, the following subsections elaborate the foremost found framing attributes, found by claims through a thorough review of literature.

3.1 Crowdfunding narrative framing attributes

This part reviews literatures that found empirical evidence on what framing attributes or linguistic styles are applied by crowdfunding entrepreneurs in communicating their initiative to potential backers. The impact of multiple features and the way an entrepreneur presents an initiative, project or business idea, aiming to solicitate sufficient funding through crowdfunding, is widely recognized by various studies e.g. by Anderson (2016), Frydrych et al. (2016), Sauro (2014) and Calic et al (2016). Apparently, literatures that study crowdfunding narratives solely include data from crowdfunding platforms that were either donation-based or reward-based. Bi, Liu & Usman (2017) claim that the reason for this is that the decision process for potential backers is very complex for equity- and lending-based crowdfunding. In addition, these authors say that due to the fact that crowdfunding is an emerging field of research, equity- and lending-based crowdfunding are not yet used for studying crowdfunding narratives.

For donation-based crowdfunding, successful requestors for donations mitigate the actual request for monetary support at the end of a narrative trying not to seem needy (Paulus & Roberts, 2018). The study also claims that, from a linguistic point of view, successful narratives entail very specific language on what is needed and what will be done with received donations. Some found evidence that inclusion of business- or money-related word use accelerates project success (Majumdar & Bose, 2018). Requesting on the behalf of someone else is another effective framing technique (Paulus & Roberts, 2018). Entrepreneurs need to profile their selves in a way it evokes compassion of potential donors by being cheerful, hardworking and brave, using words closely related to strength, bravery and fighting mentality (Paulus & Roberts, 2018). This could be interpreted as emotional language, strongly discommend by other literature, i.e. by Majumdar & Bose (2018), discouraging the use of emotional language, but rather present factual, evidence-based information. Yet another study on their turn recommend use of negative emotions in a request for donations. Very remarkable are claims made by authors of studies regarding the gender of project creator or entrepreneur; Female-related references and in general narratives written by females appear to be more effective (Majumdar & Bose, 2018). Finally, in an environment with very strong specific cultural norms and values, a narrative referring to these norms and values appear to be very successful

(Khut, 2016). However, this has only been investigated in one specific culture. No literature has been found that provides evidence that this principle applies for other cultures as well.

Multiple literatures have been found that prescribe effective frames for narratives in the reward-based crowdfunding environment. Where donation-based crowdfunding allegedly should include negative emotions, this type of crowdfunding is told to be most effective when including positive emotions (Gorbotai & Nelson, 2015; Chen, Thomas, & Kohli, 2016). Besides, these textual appeals should be written with inclusive language and should not include business-related language. Again, some studies claim that appeals written by females are found to be more successful than appeals written by men (Frydrych, Bock, & Kinder, 2016; Gorbotai & Nelson, 2015). Successful entrepreneurs confer legitimacy on a new venture with a compelling story that communicates both novelty and familiarity (Frydrych, Bock, & Kinder, 2016). Lastly, there is a difference between writing a textual appeal via the central route and the peripheral route. The central route is the process by which people evaluate issue-relevant information through critical thought. Persuasion via the central route typically includes product-specific information regarding the product's quality and usefulness. Secondly, the peripheral route is a less cognitive effortful process through which a potential backer is persuaded by portraying values not directly related to the project itself (Allison, Davis, Webb, & Short, 2017). The latter seems to be less effective, although it is in larger quantities related to a potential backer's emotions (Bi, Liu, & Usman, 2017; Allison, Davis, Webb, & Short, 2017). Final findings on reward-based crowdfunding narratives are provided in an article by Chen, Thomas & Kohli (2016) claiming that funding performances increase when an entrepreneur uses a guilt appeal, being an appeal that highlights a feeling of responsibility; Empathy and self-efficacy are important antecedents of guilt appeal, as the authors claim. In terms of other appeal types, self-benefit and others-benefit appeals (Chen, Thomas, & Kohli, 2016)

For non-profit crowdfunding project narratives, including signs of need, child harm, and victim-related terminology, and having a message written in a professional way increases fund gaining performances (Anderson, 2016). There is a big difference between non- and for-profit crowdfunding; Apparently, non-profit projects rely far more on neediness and self-presentation, where for-profit projects should convince potential funders of their trustworthiness (Anderson, 2016). Some projects seem to be a mixture of non- and for-profitable, so-called hybrid projects. For these projects it is important to profile themselves in the narrative as either non- or for-profit, and not both, to be more effective (Moss, Renko, Block, & Meyskens, 2018).

3.2 Climate change narrative framing attributes

The second lens taken on for the literature study focusses on climate change communication solely. In other words, what does literature tell us when it comes down to convincing people to engage themselves into anti-climate change initiatives? Accordingly, this theoretical lens focused on how climate change narratives should be framed in order to evoke awareness and intention to act towards a climate-related issue, and how this message might be framed differently among varying audiences. To get engaged to a specific climate change action or initiative, many researches emphasize that the narrative told should be targeting someone's emotions to decrease psychological distance of climate change (Ramkissoon & Smith, 2014; Spence, Poortinga, & Pidgeon, The psychological distance of climate change, 2012; Jones, Hine, & Marks, 2017). In addition, climate change's intangible nature often leads to a psychological distance to individuals (Morton, Rabinovich, Marshall, & Bretschneider, 2011). To minimize psychological distance, several framing attributes should be taken into account: Impact frames, Attribution frames, Valence frames, Spatial frames, and Temporal frames (Leiserowitz, Communicating the risks of global warming: American risk perceptions, affective

images, and interpretive communities, 2007; Scannell & Gifford, 2013; Busch, 2016). The results of the literature review related to these five frames are each explained below.

Firstly, the impact of the issue should be appealing to the audience. For example, a climate change narrative to bird watchers is expected to be more effective if the possible or present impact of climate change on birds is emphasized. Thus, highlighting the impact on either humans or animals/nature doesn't need to be more effective per se, as long as it is most to the heart of the audience. In terms of engaging to act against climate change, it appears to be important as well if the impact of the solution is significant and supported by others (Dickinson, Crain, Yalowitz, & Cherry, 2013). Some claim that framing climate change in terms of danger to humans could evoke thoughts of death which could activate an inner defense against the message and pushing it further into the future as response (Dickinson, 2009; Pyszczynski, Greenberg, & Solomon, 1999).

In contrast, other literatures claim that narratives emphasizing on personal human-impact of climate change, being climate change told as a threat to public health, is found to be effective (Myers, Nisbet, Maibach, & Leiserowitz, 2012; Maibach, Nisbet, Baldwin, Akerlof, & Diao, 2010). Emphasizing on the importance of national security and its relation to climate change consequences, is claimed to be more effective to audiences having a doubtful or dismissive attitude towards climate change (Myers, Nisbet, Maibach, & Leiserowitz, 2012). Besides assessing if the subject of impact is close or distant to a person's interests, another impact attribute appears to be decisive for a message's persuasiveness; Hart (2011) concluded that besides personal interest it is very important if a certain action to mitigate climate change impact is supported by others. Secondly, the decision to take part in mitigation actions is far more likely for an individual when a victim is specifically identified, regardless what or whom is impacted (e.g. animal or human) (Kogut & Ritov, 2005).

Secondly, whom should be addressed as the cause of climate change isn't a discrete choice between humanity or nature. Apparently, if the belief is adopted amongst people that humanity in general is to blame, the intention to act against climate change was higher (Malka, Krosnick, & Langer, 2009; Busch, 2016; Bord, O'Connor, & Fisher, 2000). This opinion contradicts with results from a different study where the effects of narratives holding humanity or nature responsible for climate change, were compared; This comparison led to the conclusion that narratives with different responsible agents (humanity or nature) did not have a significant influence on perceived risk of climate change (Otieno, et al., 2014). Although humanity is known and acknowledged as main contributor or global warming, many audiences don't relate themselves to stories claiming humanity is completely accountable. It also appears that specifically pointing fingers to the audience itself decreases the effect of climate change narratives (Reser, Bradley, Glendon, Ellul, & Callaghan, 2012). The latter makes sense since it could arise indignation or outrage.

Similar to crowdfunding narratives, the load of a story (i.e. the valence frame) seems to be decisive as well. Lots of literatures have been written on this topic, however outcomes seem to deviate. On the one hand, negative framing is claimed to be more persuasive in comparison to positive framing (Amatulli, De Angelis, Peluso, Soscia, & Guido, 2017; Chang, Zhang, & Xie, 2015; Olsen, Slotegraaf, & Chandukala, 2014; Levin, Schneider, & Gaeth, 1998; Futerra, 2005). On the other hand are studies claiming negative framing is not effective since it increases uncertainty, and it decreases someone's motivation to get engaged to climate change, and therefore advocate a positive or gain-frame approach (Morton, Rabinovich, Marshall, & Bretschneider, 2011; O'Neil & Nicholson-Cole, 2009; Spence & Pidgeon, 2010; Gifford & Comeau, 2011; Feinberg & Willer, 2011). Many other insights are provided by numerous literatures on the most effective valence frame for climate change communication,

yet a clear pleading remains unwritten, apart from a study recommending a u-shaped valence frame; Claiming that a negative framing approach might very well be effective, nonetheless, being too negative is expected to be ineffective (Daniels & Endfield, 2009; Ereaut & Segnit, 2006; Liverman, 2009).

Communicating climate change as having an impact locally, globally, or far from home also affects the psychological distance to the problem (Scannell & Gifford, 2013). Again, it's not possible to claim either communicating global, or local impact of climate change is more effective than the other. Alike the impact frame, the spatial frame should be addressing what is most to the heart of the audience; this could be the danger to the forest next door, or the polar bears on the artic, whatever is held more dearly. That is, the attachment to a place is most important to consider when selecting the spatial frame for a climate change narrative, where, obviously, most people are attached to their local areas prominently, which supports other literatures on this topic (Leiserowitz, Communicating the risks of global warming: American risk perceptions, affective images, and interpretive communities, 2007; Swim, et al., 2009). However, these claims are contradicted by others, namely that framing climate change impacts being perceived as distant will result in climate change impacts being perceived as more severe (Spence & Pidgeon, 2010).

For the temporal frame, Busch (2016) claims that climate change is very often framed as an issue for the future, affecting our (grand)children's lives. Some say it is a must to address climate change as a problem of here and now, and that action should follow accordingly, since future framing could lead to inaction and a wait-and-see approach (Center for Research on Environmental Decisions, 2009). In addition, employing a future-oriented narrative when communicating the problems of climate change is called problematic since people are proved to heavily discount future events when making trade-offs (Van der Linden, Maibach, & Leiserowitz, 2015). However, framing the effects of climate change mitigation actions, the above does not apply. Several researchers found that potential participants of climate change mitigation actions were more willing to participate if their actions would have future impact and would benefit future generations, rather than gaining impact in the near future (Dickinson, Crain, Yalowitz, & Cherry, 2013; Rabinovich, Morton, & Postmes, 2010). Since some literatures (Spence, Poortinga, & Pidgeon, 2012) (Leiserowitz, 2005) claim that many people view climate change as distant future threat, it makes sense to communicate climate change as a problem of today. Whereas the effects of taking action should be recognized as creating a better future.

3.3 Chapter closure and introduction to the next chapter

Wrapping up Chapter 2 of this Master Thesis report, there is now a clear overview on what claims existing literatures have made regarding what framing attributes are used in the two theoretical domains; (1) Crowdfunding narratives, and (2) Climate change communication. For both reviews some contradicting findings and claims were found. However, for this research this won't hurt the outcomes since the effects of specific framing attributes are not yet included in the study. For future follow-up research it is interesting to see whether which of the found claims are true or untrue for green technology crowdfunding performances. Arguably, some authors might perceive specific framing attributes differently than others. Hence, the definition of framing attributes as composed for this study, might slightly deviate from their original meaning. All identified frames are collected and summarized in two tables, to be found in Appendix D and E. Each framing attribute contains three aspects; Firstly, the options within each framing attribute. Those are the defined options by this research an author could have choose to frame their narrative. Secondly, and very important to understand the remainder of this study, are de definitions of those options. Based on these definitions the framing attributes

will be analyzed on presence or absence in the narratives included in the data sample. Finally, the sources from which the framing attributes are extracted from. The literature review embodied the answer to the first of five SRQs. The answer to SRQ1 are the constructed list of framing attributes in Appendix D and E. At the same time, these tables are the provisional list of codes that will be used for the analyses. The next chapter will report the procedures taken and results found by the analyses, resulting in the answers of the remaining four SRQs (2-5).

4 ANALYSES RESULTS AND DISCUSSION

All results of the analyses will be presented in the following sections. Moreover, all evidence for four of the five SRQs (2-5) for this research can be found in this chapter and some of the appendices. The first SRQ is answered in the literature review, in chapter 3, resulting in two tables of framing attributes, plus the possible options per framing attribute. These tables, stored in Appendix D and E, will be the starting point of the analysis. This chapter will merely present the results of the analysis, rather than discussing and drawing conclusions upon the results. The latter will be part of the chapter hereafter.

4.1 Results of the analysis

The following sections each provide the outcomes of the analyses conducted. The first analysis explores presence or absence of all framing attributes in the entire data sample. Thereafter, three cross-analyses follow; A cross-country analysis, in which differences in narrative framing is explored between four countries. A cross-model analysis, in which differences in narrative framing is explored between projects from four different crowdfunding models. And finally, a cross-purpose analysis, in which the difference in narrative framing is explored between projects directly countering global warming, and projects that do not.

4.1.1 Discussion: Framing attributes in green technology crowdfunding narratives

Seventy-two narratives of green technology crowdfunding projects have been searched for framing attributes that were found during the literature review. These are summarized in two tables in Appendix D and E. By means of a content analysis, using the NVivo 12-software, either presence (1) or absence (0) of each option per framing attribute has been determined. This analysis resulted in binary data set, which can be found in Appendix F and G. A count is made that vertically aggregates all 0s and 1s for each option in all framing attributes. This count results in values shown at the bottom of both Appendix F and G, and subsequently plotted in bar graphs, shown in Figure 4.1 and Figure 4.2, below.

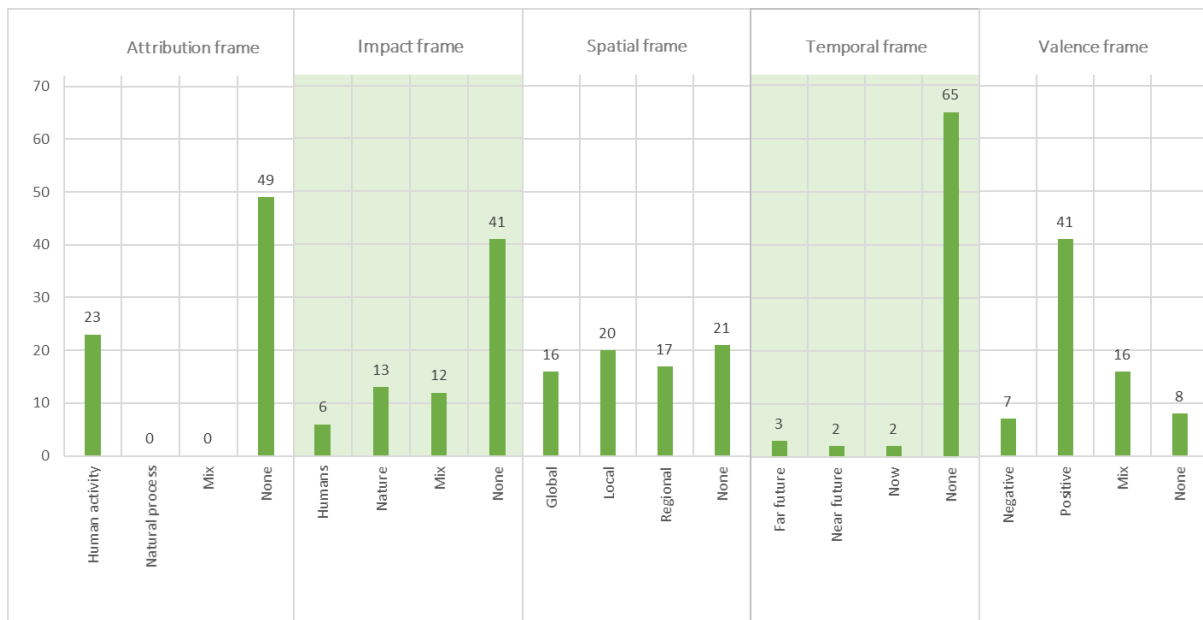


Figure 4.1: Counts of observed climate change framing attributes

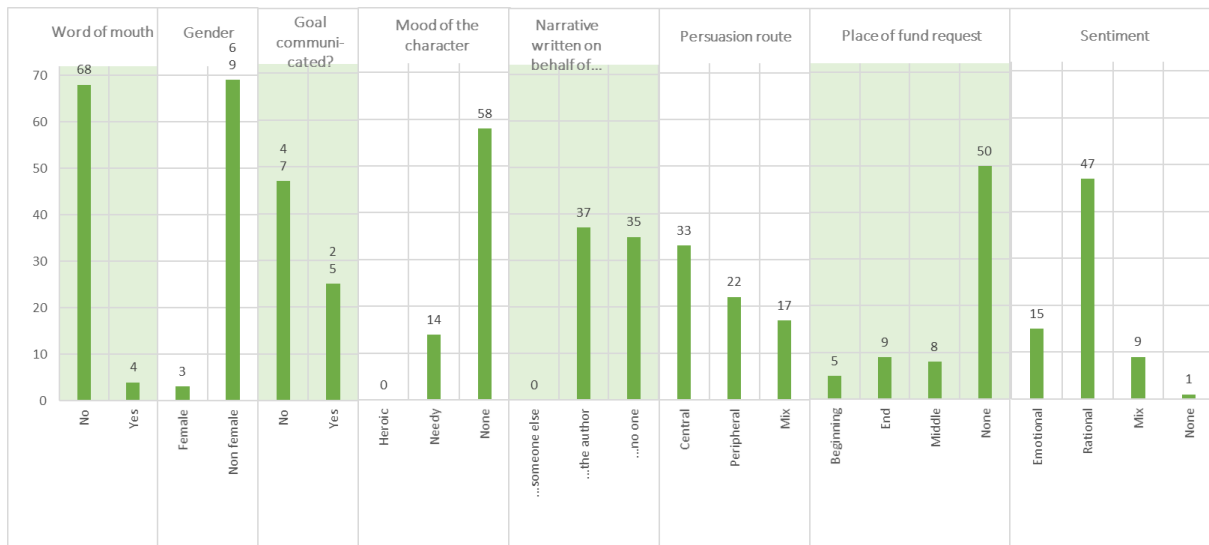


Figure 4.2: Counts of observed crowdfunding framing attributes

In the next sections, each framing attribute, and the options within that frame, will be discussed individually. Aggregating those comments form the answer to SRQ2.

Attribution frame

As shown in Figure 4.1, not a single narrative within the data sample frames climate change as being caused by a natural process. Consequently, none of the narratives combines the two options within the attribution frame. A notable observation is that just 23 out of 72 narratives frame climate change as being induced by human activities. An example of how human activity is framed as polluter is shown below.

“...how much plastic, we as consumers, throw away and burden the environment with.” – Author of BI_RBC_NO_1

The majority (49 out of 72) of the narratives do not apply the attribution frame at all. The narratives of green technology crowdfunding do not spend much effort on communicating the causes of climate change to persuade potential backers. It appears that the authors of green technology crowdfunding narratives emphasize on what way to go, rather than on pointing out what caused climate change.

Impact frame

The authors of green technology crowdfunding narratives approximately frame the impact of climate change equally: 16 out of 72 mention human beings as victim of climate change and 13 out of 72 mention nature as victim of climate change. Besides, in twelve occasions both humans a nature were framed as victim in the same narrative. Sometimes even within a single sentence:

“Everyone knows that chemicals used to kill weeds can be harmful to the environment and ultimately ourselves.” – Author of KS_RBC_UK_5

Similar to the attribution frame, the majority of the narratives do not apply the frame at all (41 out of 72). The impact frame implies communicating who is to suffer from the impact of climate change. However, during the analysis it appeared that in green technology crowdfunding the impact frame is utilized differently; Instead of addressing the main victims of climate change, the authors apply the impact frame by addressing who will no longer suffer from climate change when their technology becomes operational. Another observation made during the analysis is that authors possibly assume the impacts of climate change as obvious and

therefore do not mention these impacts distinctly. A good example is the narrative of IGG_RBC_USA_1. This narrative addresses greenhouse gas emissions as the biggest problem. The author has written a huge narrative with lots of details that really gets the reader excited for what looks like the ultimate solution against greenhouse gas emissions. However, within the entire narrative there is not a single word on the impact of climate change on nature or humans once. This and many other narratives presume that the initiators of green technology crowdfunding projects might be very much into the battle against climate change that they get nearsighted and exclude information that might be considered obvious. Villarino & Font's (Villarino & Font, 2015) findings on the lack of persuasiveness in sustainability communication invigorate this presumption. These authors claim that in sustainability marketing, there is far too much focus on the product, rather than emphasizing on facts that influence the decision-making of a potential client, or for crowdfunding, a potential backer.

Spatial frame

The three options for applying the spatial frame are found to be present almost equally; 16 global, 17 regional, 20 local. Still a vast number (21) of narratives do not utilize the spatial frame at all. The impact frame as extracted from several literatures implies communicating climate change as a global, regional, or local problem. However, all narratives in the data sample that are framing climate change as a local or regional problem, were initiatives related to a specific region or location. Arguably, the authors of these narratives attempted to strengthen their persuasion efforts by communicating climate change consequences, or benefits in general, for that specific region or location. An example for this framing tactic is shown below.

“NOVATON's systems blend Zero Water Discharge (ZWD) with Recirculating Aquaculture System (RAS). This clean technology is used to locally produce antibiotic free, environmentally sustainable shrimp. The energy needed on the farm is provided by clean solar roofing.” – Author of CRC_EBC_UK_2

Aggregated, the spatial frame as extracted from literatures writing about climate change narrative framing, is not found in green technology crowdfunding narratives. The definition therefore requires a modification which will be explained in more detail in the next chapter.

Temporal frame

The framing attribute least applied by the authors of the narratives in the data sample is the temporal frame. This finding can be perceived as counter-intuitive; One would expect that any author of a crowdfunding narrative would address a situation they try to change as urgent, so potential backers feel that action is required right now. Or authors of crowdfunding narratives would communicate that what is held most dearly to potential backers, e.g. future of their children, is in danger. In any of these cases, it would be obvious if one of the three options for applying the temporal frame is found frequently in the data sample. Yet 65 out of the 72 narratives do not contain any temporal framing of climate change implications. When an author decided to apply the temporal frame it again coheres with the solution the demonstrated green technology allegedly provides. The following quote illustrates how this might look like:

“Our collective work to decrease carbon emissions to slow down climate change will positively impact generations to come.” – Author of CH_DBC_USA_2

Valence frame

Many contradicting conclusions and claims were found in literatures regarding the valence frame. Some of them made claims that persuasion is more effective when the narrative was written with a negative load, where others claimed the opposite. Table 4.1 summarizes the contradictions found in literature regarding negative- or positive valence framing.

Table 4.1: Summarized contradiction in literature regarding valence framing

Literature advocating negative valence framing	Literatures advocating positive valence framing
Amatulli, De Angelis, Peluso, Soscia & Guido, 2017	Morton, Rabinovich, Marshall & Bretschneider, 2011
Chang, Zhang & Xie, 2015	O'Neil & Nicholson-Cole, 2009
Olsen, Slotegraaf & Chandukala, 2014	Spence & Pidgeon, 2010
Levin, Schneider & Gaeth, 1998	Gifford & Comeau, 2011
Futerra, 2005	Feinberg & Willer, 2011

The results of the analysis showed that narratives are both positively- and negatively framed. 7 out of the 72 narratives contained fear or threat inducing language, emphasizing on problems and potential negative consequences. However, the tight majority of the narratives (41 out of 72) contained language emphasizing on opportunities or problem solutions. A conclusion worthy to mention, is that 16 of the 72 narratives in the data sample used a combination of valence framing. The authors of these narratives emphasized on threats or undesirable scenarios, to explain how their technology would help to avoid, mitigate or solve the threat, in succession. The quote below is an example of how this is done:

“Two things need to happen: reduce our production of greenhouse gases and increase the amount of carbon removed from the atmosphere. We fear that the actions in Sheffield are doing the exact opposite of both! We therefore wish to create a campaign to purchase and install Urban Wind Trees both to produce renewable energy and act as an aesthetic reminder of Sheffield's places as the 'tree capital' of the UK.” – Author of CH_DBC_UK_1

Word of mouth

Several literatures e.g. by Bi, Liu & Usman (2017) and Parhankangas & Renko (2017), recommended adding word of mouth to a crowdfunding narrative. That is, addition of quotes of people that have already made a fund to your crowdfunding campaign or support the initiative otherwise. In that way they encourage potential backers to actually commit a fund. Although it is told to be a very effective, it is only used by 4 of the 72 narratives in the data sample. Figure 4.3 shows how this is done by the authors of SB_EBC_NL_1.

- ING - Ralph Hamers (CEO): "Digital Material Passport supports the circular economy and reduces waste";
- Volker Wessels - Lars van der Meulen (Manager Corporate Responsibility): "Verschrikkelijk trots dat we eerste Kennedy hebben mogen zijn in dit revolutionaire initiatief";
- TBI - Wendeline Besier (Manager MVO): "Dit soort initiatieven hebben wij nodig om onze organisatie klaar te stomen voor de toekomst";
- Alliander - Bart Blokland (Directeur Shared Services): "Goed nagedacht over hergebruik van materialen";
- IMD Raadgevende Ingenieurs - Pim Peters (Directeur): "Vastleggen van de primaire grondstoffen om te hergebruiken in de toekomst";
- W/E adviseurs - John Mak: "We denken dat het echt een verandering gaat betekenen in de bouw- en vastgoedwereld".
- Mitsubishi Elevator Europe - Ronald Koedam (Sales Manager): "waardering en adressering van grondstoffen in de toekomst is bijzonder belangrijk";
- ProRail - Karen te Boome (Manager Milieu en Duurzaamheid): "hoe mooi zou het zijn als je weet waar die materialen zich bevinden";
- Heijmans - Robert Koolen (Directeur Strategie & Beleid): "Madaster belangrijke bouwsteen voor de materialentransitie";
- ING - Joost van Dun (Circular Economy Lead): "Madaster is een geweldige oplossing om gebouwen te kunnen tracken en monitoren, uit welke componenten het bestaat en hoe de waarde hiervan is bepaald".

Figure 4.3: Example of how word of mouth is applied in a narrative (texts in Dutch)

Arguably, authors of the crowdfunding narrative do not adjust their narrative while their campaign is up and running. A reason for this could be that authors do not consider intermediate adjustment of their narrative as a contribution to their project's performances. Another reason could be that crowdfunding platforms do not allow intermediate adjustments to the narrative. Either way, word of mouth is hardly ever applied in narratives of green technology crowdfunding projects.

Gender of the author

Former research has shown that crowdfunding projects with narratives written by females, or indicated as such, in general outperform projects that are not (Gorbotai & Nelson, 2015). Nonetheless, only 3 of the 72 narratives are written by a female or claim to be written by a female, as shown by example below.

"My name is Clare, I was a lawyer, but I decided that I wanted to do something to make a difference to this daunting issue." – Author of CH_RBC_UK_1

Gorbotai & Nelson (2015) concluded that narratives written by females are written in a way that is more appealing and persuading than narratives written by men. However, the same authors also suggest that potential backers' willingness to fund possibly increases when the initiator is a woman. The latter would mean that whenever a narrative is written by a female indeed, it should be mentioned that it is written by a female to evoke a desired effect. For green technology crowdfunding this could mean two things; Firstly, the initiator of green

technology crowdfunding are mostly men. Or, secondly, initiators of green technology crowdfunding are not aware of the potentially positive effects of appointing a woman as author of the narrative, or communicating that a woman is initiating the crowdfunding campaign.

Goal communication

Paulus & Roberts (2018) suggest that to increase the probability for success for a crowdfunding project it is important to be specific on what is needed. Communication of the targeted amount of funding not always found present in the data sample. 47 of the 72 authors did not communicate their monetary goal. Only 25 of the 72 authors did, for example in the following manner:

“This is why we are looking to raise £15,000 to allow us to finish the product by incorporating enhancements we have identified during testing this summer, continue trials and keep the lights on whilst we privately raise the investment required for the commercialization stage of our business.” – Author of KS_RBC_UK_5

There is however a side note to this; Every platform that provided projects for this research, communicated the goal on their webpage. This is a default part of the platforms’ webpage layout. It could be that authors did not consider it necessary to additionally communicate their goal in the narrative as well. Although this might sound evident, communicating the goal in the narrative too provides an opportunity to explain how this goal is established and what money is needed for what investments.

Mood of the character

Arguably, entrepreneurs need to profile their selves in a way it evokes compassion of potential donors. For instance, by profiling the character in the narrative, as being heroic. That is, as being cheerful, hardworking and brave, using words closely related to strength, bravery and fighting mentality (Paulus & Roberts, 2018). Alternatively, the author could profile the character in the narrative as needy, by including signs of need, child harm, and victim-related terminology (Anderson, 2016). Profiling the character as being heroic is not applied a single time. Some authors (14 out of 72) profiled themselves as being needy. For example, this can be done by claiming that child welfare and the lives of farmers depend on your decision to back the project:

“...used for social cause such as child welfare, improving the lives of the farmers that supply raw materials for our products, etc.” – Author of CH_EBC_UK_2

Green technology crowdfunding deviates from regular crowdfunding that it does not seek funds to support a person or other social initiative. Although the crowdfunding campaign initiator could have been framed as being heroic, an explanation for the absence of framing the character of a green technology crowdfunding project as heroic could be that neither technology or climate change can be profiled as hardworking, brave or having a hardworking mentality. The other option in this framing attribute, the character being needy, could apply for the author of the narrative; Some of the projects concerned an individual seeking funds for a technology, for which they profiled themselves as being needy in the narrative.

Narrative written on behalf of...

Similar to the framing attribute *Mood of the character*, this framing attribute might deviate in green technology crowdfunding relative to regular crowdfunding. Paulus & Roberts (2018) claim that making a request for money on behalf of someone else increases crowdfunding success. A possibility for green technology crowdfunding could be to frame the narrative as such that it seems the environment is in fact the one you are helping as a backer. Alternatively, the author of the narrative is not part of the initiative at all. Either way, in green technology crowdfunding, this research reveals that writing a narrative for someone else is not applied.

More than half of the narratives (37 out of 72) are written on behalf of the author him- or herself. In 35 of the 72 narratives it could not be deduced from the narrative whether it was written on behalf of the authors themselves (third person) or not. For those it is still possible that the narrative has been written on behalf of someone else, however, this is not made clear. Hence, the desired effect of writing a narrative on behalf is therefore missed. Concluding, although literatures advocate framing the narrative as seeking funds for someone else, this is not applied by authors of green technology crowdfunding project narratives.

Persuasion route

Persuading potential backers via the central route is claimed to be more effective (Allison, Davis, Webb, & Short, 2017). However, trying to persuade via the peripheral route in larger quantities related to the reader's emotions (Bi, Liu, & Usman, 2017; Allison, Davis, Webb, & Short, 2017). Apart from the two routes' effects, both are applied regularly in green technology crowdfunding. The central route, providing issue-relevant information that is processed by readers through a critical thought, is found in 33 of the 72 narratives. On the other hand, the peripheral route, portraying values and information not directly related to the project itself, is used in 22 out of the 72 narratives in the data sample. Besides, in 17 occasions the authors, on purpose or not, decided to combine the two persuasion routes in a single narrative. This was in particular the case for narratives being relatively long. The following example shows how this was done in the narrative of project OPC_RBC_NL_1:

Peripheral:

"The response was overwhelming. News outlets from all over the world reported on Team FAST's Formic Acid projects. Next to this, we have won several innovation awards such as the STW Open Mind and the BRAINS award."

Central:

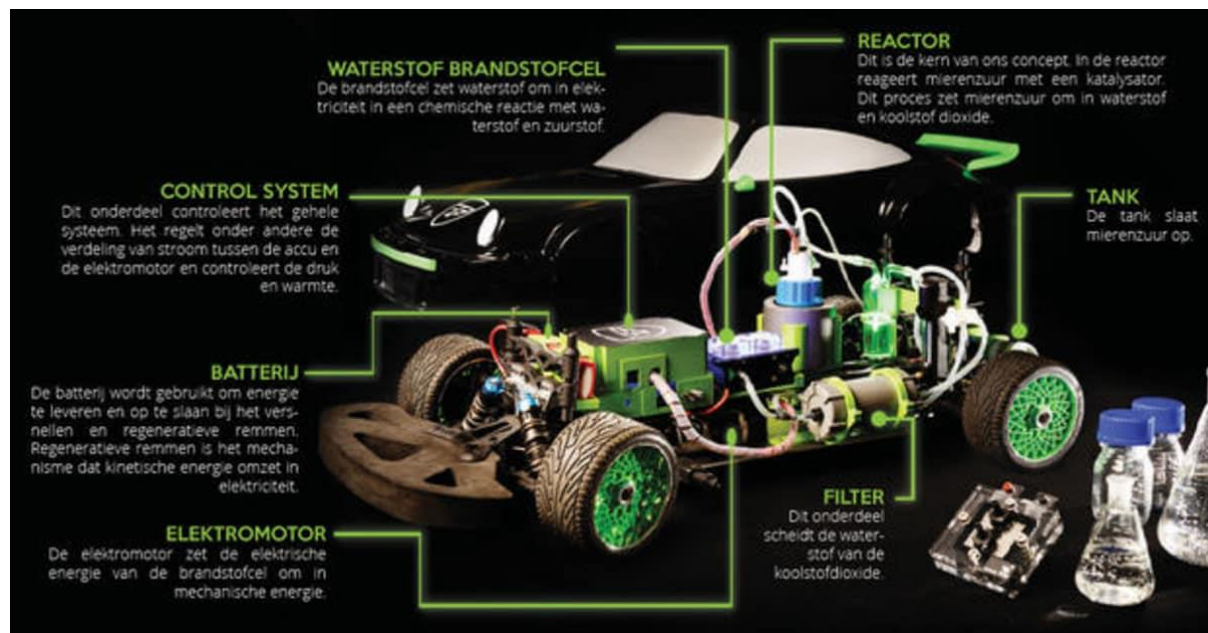


Figure 4.4: Persuasion via the central route providing product-specific information about a formic acid-driven vehicle (in-picture text in Dutch)

Place of fund request

Making the actual request for money is recommended to be placed at the very end of a narrative (Paulus & Roberts, 2018). This advice is only adhered to in 9 narratives in the data sample, for example in the narrative of project CH_DBC_USA_3:

“Please make a donation and support this global collaboration!” – Author of CH_DBC_USA_3

Apart from making the request in the beginning (5) or middle (8) the most narratives did not request potential backers for funds at all: 50 out of 72.

Sentiment

As explained in the literature review, writing a crowdfunding narrative with a rational sentiment is claimed to increase crowdfunding performances relative to writing an emotional narrative (Majumdar & Bose, 2018). From the 72 narratives, 15 contained words indicating need for funds, even backing for money, or in any way attempting to arouse a feel of guilt or responsibility to a potential backer. A quote that illustrates well how this emotional sentiment is used in one of the narratives is shown below.

“I am honest, hardworking, dedicated and genuine. Although I can be quite a geek about things, integrity and customer service are my top priorities. Finally, I am no stranger to failure. I've always protected and honored my partners, shareholders and investors in bad times while following through with whatever needs to be done. You can rest assured that my progress updates will be regular and frequent, and any notifications of delays or other issues while be sent swiftly.” – Author of KS_RBC_USA_2

Opposite to this are narratives containing rational texts communicating factual, evidence-based or business- and money-related language. That rational sentiment was applied by 47 of the 72 narratives. The majority of rational writings were closely related to the technology for which an author is seeking funds for; For instance, providing numerical facts on the technology's (potential) power, range or other performances. Similar to the persuasion route, several authors (9 out of 72) combined the two types of sentiments within a single narrative.

4.2 Revision, deletion or expansion of the framing attributes

As explained in the research design, the analyses follow a provisional coding principle. That is, a list of framing attributes (*codes*) is established prior to the analyses, derived from a thorough literature review. Thereafter, observations are made by analyzing green technology crowdfunding narratives on presence or absence of these codes. Based upon these observations the provisional list of codes might require a modification in form of revision, deletion, or expansion (Saldaña, 2009). At this point in the research, that leaves us at aggregating the provisional codes (see Appendix D and E) and the results of the qualitative analyses, to see whether provisional codes should indeed be revised, deleted or expanded.

4.2.1 Revision

The findings of the analyses result in the revision of two framing attributes; The impact frame, and the spatial frame. Displayed in Appendix E, numerous literatures have indicated the impact frame as a relevant framing attribute. However, this study has explored that the impact frame is applied differently in green technology crowdfunding narratives; Instead of addressing the main victims of climate change, authors apply the impact frame by addressing who will no longer suffer from climate change when their technology becomes operational. Next, the spatial frame is mostly used in green technology crowdfunding narratives by explaining what places will benefit once the technology becomes operational reality. Both the impact- and the spatial frame are extracted from climate change communication literatures. Both climate change framing attributes are now applied in a crowdfunding context. This might explain that both attributes are utilized in a slightly different fashion. Reasonably, the impact- and spatial frame are therefore rather used as tool to emphasize the potential value of the technology for which funds are assembled, rather than getting people engaged with climate change mitigation solely.

4.2.2 Deletion

The second last step in this exploratory inductive research is to delete the framing attributes from the provisional set of framing attributes as established on basis of the literature review. In other words, this section deletes framing attributes from the set of framing attributes for green technology crowdfunding. Framing attributes based on crowdfunding- or climate change narrative framing literatures that were not found present or barely present (<5) in narratives of green technology crowdfunding are deleted. The lower-threshold of 5 has been established manually since no literature has been found that advocates a lower-threshold in qualitative research using provisional coding.

The first framing attribute to delete is the temporal frame. 65 of the 72 narratives in the data sample did communicate when the consequences of climate change will happen. The three options defined for that framing attribute – now, near future and far future – were only found present sporadically. Therefore, the temporal frame will be deleted from the set of framing attributes in green technology crowdfunding narratives.

Subsequently, there are three framing attributes seriously recommended to apply according to several literatures. These are *word of mouth*, indicating a female as author (*gender*), and *writing the narrative on behalf of someone else*. Since these framing attributes were recommended, one might expect that those are frequently used. On the contrary, word of mouth is merely used in 5.5% of the narratives; Only 4.2% of the narratives indicate a female as being the author; and none of the narratives are written on behalf of someone else. All despite allegedly being an effective approach. Another way of message framing not applied once is portraying the character of the story as being needy. Therefore, framing a needy mood of the character will be deleted from the provisional list of codes.

Finally, the attribution frame can be applied in two ways; Framing human activities as main cause of climate change, framing climate change as being a natural process. One might expect that the latter won't be applied frequently, since it is an opinion not shared by many. Besides, authors of a crowdfunding projects desire to make a change with their campaign. Indicating climate change as a natural process might therefore not be a wise way of framing a cause. According to that expectation, none of the 72 narratives in the data sample frame climate change as being caused by a natural process. For that reason, the option *natural process* in the attribution frame is deleted.

4.2.3 Expansion

Finally, the provisional list of framing attributes is expanded with new attributes. These new attributes have been discovered while conducting the analyses. Each of them will be explained individually below.

Request for funds presented as opportunity

Normally, one would expect a narrative to contain a part in which the author sincerely requests or begs investors to make a fund. In contrast, some narratives present their enterprise or idea as a great opportunity for which a potential investor should not waste any more time or hesitation and rather hurry up not to miss the opportunity. An example of this persuasion style is applied by the author of project GC_LBC_NL_1 as its narratives says:

“Watch out: this unique opportunity to participate only applies to 780 solar panels” and “You will then (if you are on the waiting list, rev.) only qualify when another investor withdraws prematurely.” – Author of GC_LBC_NL_1

In addition, many lending-, and equity-based crowdfunding narratives present their project as an offer to investors as interesting investment model, such as all the lending-based projects

on the Dutch platform called GreenCrowd. Another narrative frames its crowdfunding campaign as opportunity to pay-off a debt, as shown in the quote below.

“Your plastic footprint for life is the same as ca £60.- worth of recycling capacity in RT700.” – Author of CRC_EBC_UK_4

The RT700 is the plastic recycling technology that these entrepreneurs seek funds for. What they try to accomplish is a perspective in which a potential funder feels it is not more than normal to invest £60.- only to equalize the damage that one allegedly has already made or is about to make in his or her life. These styles of writing a narrative might induce an urge of hurry or appeal to a potential backer’s conscience.

Communication of risks

Equity- and lending-based projects commonly communicate an, often sophisticated, presentation of a risk analysis. The risks communicated concern investments risks only and are purely informative for the reader. Perhaps, these sections are mandatory at some of the equity- or lending based crowdfunding platforms.

Self-evident styles

Many narratives omit to evidently emphasize on climate change being caused by humanity or human activities. However, looking at the narrative of e.g. project KS_RBC_NL_4, CO₂ emissions and how to reduce it stands core in the narrative nevertheless the author does not one time distinctly mentions the causal inference of human CO₂ emissions and climate change. Since many more narratives own a similar style of writing, the attribution frame is not applied in the majority of the narratives (41 out of 72). Arguably, authors of crowdfunding projects focusing on green technology products or services, don’t even question who is to blame for climate change and assume this self-evident and fiddling, resulting in an absence of the human-blaming attribution frame.

Plan of action communication

Several projects included in the analysis provided a step-by-step overview on how they are planning to realize their technology. Some of these plans are very thorough and extensive. Others are rather pointwise sentences that briefly indicate what steps will be taken once the target of the crowdfunding campaign is being reached.

The last part of SRQ1 is to aggregate the results of the analysis and the modification of the provisional set of framing attributes extracted from the two literature streams. This aggregation is done in form of a new, modified list of framing attributes for green technology crowdfunding. This set of framing attributes can be found in Appendix H.

After exploring if the categorization (nationality, underlying crowdfunding model, or purpose) is significantly associated with how a narrative is framed, each subset per category is compared to the others. Again, the χ^2 -test of independence is used to determine a statistically significant association. In the following sections, the data sample will be parted into subsets based on these characteristics

4.3 Cross-country analysis

The way narratives have been framed have now been analyzed for the entire data sample of green technology crowdfunding project narratives. To better understand how a project’s nationality affects narrative framing a cross-country analysis is done. For the cross-country analysis the null-hypothesis is: *The nationality of green technology crowdfunding projects does not affect the way the narrative is framed.* This cross-country analysis consists of two parts; The first part sees into significant differences per framing attribute for all four nationalities present in the data sample. Thereafter, the second part goes one step further by

comparing each country to one another. The same χ^2 -test of independence is performed to find out what framing attribute significantly deviates between narratives of two countries. The next two sections provide an overview of the encountered results and a discussion based on the numerical results of the cross-country analysis.

4.3.1 Results: Cross-country analysis

The data sample is divided into four subsets based on the four nationalities. When aggregating the presence (1) and absence (0) of each framing attributes a contingency table is constructed presented in Appendix I. The calculated χ^2 , degrees of freedom (df) and p-values are shown in Table 4.2.

Table 4.2: Cross-country χ^2 -test of independence results

	Attribution frame	Impact frame	Spatial frame	Temporal frame	Valence frame	Word of mouth	Gender	Goal communicated?	Mood of the character	Narrative written on behalf of...	Place of fund request	Persuasion route	Sentiment
χ^2	4,339	9,756	22,971	17,842	12,397	3,879	2,641	7,892	3,128	6,254	15,106	5,515	21,852
df	3	9	9	9	9	3	3	3	3	3	9	6	9
P-value	0,227	0,371	0,006	0,037	0,192	0,275	0,45	0,048	0,372	0,1	0,088	0,48	0,009
Significant?	No	No	Yes	Yes	No	No	No	Yes	No	No	No	No	Yes

Within the set of climate change framing attributes only the spatial frame and the temporal frame return statistically significant results of the test. In addition, for the crowdfunding framing attributes goal communication and sentiment frames are found to be significant. In total, that is 4 out of the 13 framing attributes from the set of codes.

Subsequently, as explained the narratives from each country are compared to the narratives from the other three countries in the data sample. In total six comparisons can be made:

$$\text{Number of possible combinations} = \binom{4}{2} = \frac{4!}{2!2!} = 6$$

These are: NL-NO, NL-UK, NL-USA, NO-UK, NO-USA, UK-USA. The cross-country analysis continues by investigating between what countries significant differences per framing attribute is observed. Appendix J provides all the results of the tests. The final relevant outcomes only are shown in Table 4.3 for all six combinations of countries. That is, for each combination this table shows if the impact of nationality is found to be significant (Yes) or not (No) per framing attribute.

Table 4.3: Results the cross-country χ^2 -test of independence per combination (outcome only)

	Framing attributes					Framing attributes								
	Attribution frame	Impact frame	Spatial frame	Temporal frame	Valence frame	Word of mouth	Gender	Goal communicated?	Mood of the character	Narrative written on behalf of...	Place of fund request	Persuasion route	Sentiment	
NL-NO	No	No	Yes	Yes	No	No	No	Yes	No	No	Yes	No	No	
NL-UK	No	No	No	No	No	No	No	No	No	No	No	No	No	
NL-USA	No	No	No	No	No	No	No	Yes	No	Yes	No	No	Yes	
NO-UK	No	No	No	No	No	No	No	No	No	No	No	No	No	
NO-USA	No	No	Yes	No	No	No	No	No	No	No	No	No	Yes	
UK-USA	No	No	No	No	No	No	No	No	No	Yes	No	No	Yes	

4.3.2 Discussion: Message framing in green technology crowdfunding per country

As answer to the third SRQ, this section displays how narratives of green technology crowdfunding from several countries are being framed. The results of the χ^2 -test of independence showed that the country which a crowdfunding narrative originates from has a significant impact on how that narrative is framed for four of the thirteen framing attributes; The spatial frame, temporal frame, goal communication, and sentiment. Therefore, the answer to SRQ3 states:

The nationality of a green technology crowdfunding project influences if climate change is framed as being a local, regional or global problem, and if those problems are occurring right now, will occur in the near- or in the far future. In addition, the nationality of a green technology crowdfunding project has an impact on if the funding goal is communicated or not, and whether the author attempts to persuade potential backers with a rational-, emotional-, or mixed sentiment.

In the next sections all six combinations will be discussed by taking into account the results provided in Table 4.3. Appendix K displays the differences in observed framing attributes per combination of countries. For the framing attributes proven significantly different the deltas in Appendix K will be discussed individually in the next section. However, since this research is explorative only, no further evidence-based conclusions can be drawn upon why these frames seem to differ across the four countries. Follow-up research should be conducted to better understand the relations between nationality of a crowdfunding projects and the way it is framed.

The Netherlands-Norway

Significant associations between the two countries are the spatial frame, temporal frame, goal communication, and the place of fund request. Consulting the tables in Appendix K, the first two tables show the absolute mutual differences per framing attribute, to see how much the Netherlands and Norway differ within these frames. The third and fourth table in Appendix K, display the relative differences between all the countries. Apparently, narratives from the Netherlands frame climate change much more often being a local problem than narratives from Norway (+48%). On the other hand, Norwegian narratives much more often frame climate change as being a regional problem (+52%). Besides, Dutch narratives frame climate change

less as a problem of the present compared to Norwegian narratives (-22%). Also, Dutch narratives tend to leave out the temporal frame more often compared to the Norwegians: +22%. Narratives written for a Dutch green technology crowdfunding project communicate the funding goal for the project in 57% of the times, where narratives written by Norwegians only do so in 11% of the observed narratives; A differences of +46%. Finally, both Dutch- and Norwegian narratives in most of the cases don't make an actual request for fund to the reader. However, if doing so, Norwegians tend to do this in the beginning, where Dutch narratives utilize the middle or last part of the narrative for making a fund request.

The Netherlands-The United Kingdom

None of the framing attributes are found to have significant difference when comparing narratives from the Netherlands and the United Kingdom to each other. This implies that the Dutch and the British frame narratives of their green technology crowdfunding projects is a similar way. Hypothetically, people from both countries initiating a green technology crowdfunding project possess similar conceptions on getting potential backers engaged with their technology to battle climate change.

The Netherlands-The United States of America

Project initiators from the Netherlands and the United States of America seem to differ significantly in the application of three framing attributes; Dutch narratives communicate the project's funding goal in 57% of the times, where American narratives merely do so in 24% of the analyzed narratives. A difference of 34% between the two. Secondly, there is a significant difference between Dutch and American narratives in terms of on whose behalf a narrative is written. 76% of the American narratives in the data sample are written in favor of the author him- or herself, where for the Dutch narratives the majority (57%) is written in third person. Finally, Americans more often mix rational and emotional sentiment within their narratives (35%) than Dutch authors do (5%).

Norway-The United Kingdom

Similar to the Dutch-British comparison, none of the framing attributes are found to have significant difference when comparing narratives from Norway and the United Kingdom to each other. Again, this implies that the Norwegians and the British frame narratives of their green technology crowdfunding projects is a similar way. An explanation for these findings might be that Norwegians and the British also possess similar ideas on how to get potential backers making a fund for their green technology crowdfunding project.

Norway-The United States of America

Whether Norwegian and American authors frame climate change as local, regional and global problem appears to be significantly different; Norwegian narratives frame climate change majorly as a regional problem (67%), where framing climate change as a global problem is the most common spatial framing strategy for narratives written by Americans with 41%. Again, American narratives seem to apply a different sentiment, compared to Norwegian narratives. Within the Norwegian narratives rational- and emotional sentiment are approximate equally found present and in none of these instances the two sentiments were found within a single narratives (Mix = 0%). On the contrary, Americans seem to prefer the rational sentiment over an emotional appeal. Besides, if an American narratives contains emotional language, it is often followed-up with rational sentiment (Mix = 35%).

The United Kingdom-The United States of America

For the third out of three comparisons, American narratives seem to apply a significant different sentiment. American authors combine the emotional- and rational sentiment more regularly in green technology crowdfunding project narratives. Finally, Americans seem to

write narratives more for their selves, where for British narratives one cannot make up on whose behalf a narrative is written in most instances.

General remarks on the cross-country analysis

Apart from comparing every country to one another, some additional findings have been made. First of all, *word of mouth*, *gender*, *mood of the character* and the *persuasion route* are all framing attributes not significantly deviating in any of the six country combinations. For the first three of these, it is not a striking finding; The analysis of the entire data sample has shown that these three framing attributes are not used in framing green technology crowdfunding narratives at all, or in great quantities. On the contrary, the persuasion route is applied comparably by all four nationalities, despite being present in larger amounts: Central route 50 out of 72, Peripheral route 37 out of 72. Either there is clear consensus by all four countries on how to frame the persuasion route frame, or the observations are rather coincidental. Another peculiar finding is the following; Lot of cross-country consensus is found on how to frame climate change problematics in a crowdfunding narrative. With five framing attributes and four countries, merely 3 of the 20 associations were found to have a significant difference. Finally, narratives written by United States citizens, or projects originating from the United States of America seem to differ in adding sentiment to the narrative of their green technology crowdfunding project. For the *sentiment* framing attribute, a significant difference compared to all three other countries was observed. Narratives originating from the United States of America contain much sentiment, in particular a rational sentiment (94%). In short, the application of sentiment in a narrative is more excessively used by Americans compared to the Dutch, Norwegian and British.

4.4 Cross-model analysis

Similar to the previous cross-analysis, the cross-model analysis investigates whether significant differences in framing a narrative for projects with different underlying crowdfunding models can be observed. Again, the analysis departs with stating the null-hypothesis: *The underlying crowdfunding model of green technology crowdfunding projects does not affect the way the narrative is framed*. The following two sections display the numerical results of the analysis followed by a discussion of those results.

4.4.1 Results: Cross-model analysis

The data sample is divided into four subsets once more, this occasion based on the four underlying crowdfunding models. When aggregating the presence (1) and absence (0) of each framing attributes a contingency table is constructed presented in Appendix L. The calculated χ^2 , degrees of freedom (df) and p-values, ran in SPSS, can be found in Table 4.4.

Table 4.4: Cross-model χ^2 -test of independence results

	Attribution frame	Impact frame	Spatial frame	Temporal frame	Valence frame	Word of mouth	Gender	Goal communicated?	Mood of the character	Narrative written on behalf of...	Place of fund request	Persuasion route	Sentiment
χ^2	4,614	32,189	11,843	10,991	18,55	12,824	2,25	12,025	15,19	29,136	8,701	8,589	24,242
df	3	9	9	9	9	3	3	3	3	3	9	6	9
P-value	0,202	<0,001	0,222	0,276	0,029	0,005	0,522	0,007	0,002	<0,001	0,465	0,198	0,004
Significant?	No	Yes	No	No	Yes	Yes	No	Yes	Yes	Yes	No	No	Yes

The results of the χ^2 -test of independence show that for the majority of the crowdfunding framing attributes the underlying crowdfunding model has a statistically significant on how the narrative is framed. Who is to suffer most from climate change and if climate change is communicated as threat or opportunity, seem to depend on which crowdfunding model a project is based on. Moreover, the framing attributes found significant in the cross-country analysis (spatial- and temporal frame) were found insignificant for the cross-model analysis.

Similar to the cross-country analysis, the narratives per crowdfunding model are compared to the narratives from the other three countries in the data sample. Again, in total six comparisons can be made since there are four types of crowdfunding models:

$$\text{Number of possible combinations} = \binom{4}{2} = \frac{4!}{2!2!} = 6$$

These are: DBC-EBC, DBC-LBC, DBC-RBC, EBC-LBC, EBC-RBC, LBC-RBC. The cross-model analysis continues by investigating if the narratives per combination of underlying crowdfunding model are framed significantly different, per framing attribute. Appendix M provides all the results of the tests. The final relevant outcomes only are shown in Table 4.5 for all six combinations of crowdfunding models. That is, for each combination this table shows if the impact of underlying crowdfunding model is found to be significant (Yes) or not (No) per framing attribute.

Table 4.5: Results the cross-model χ^2 -test of independence per combination (outcome only)

	Attribution frame	Impact frame	Spatial frame	Temporal frame	Valence frame	Word of mouth	Gender	Goal communicated?	Mood of the character	Narrative written on behalf of...	Place of fund request	Persuasion route	Sentiment
DBC-EBC	No	No	No	No	No	No	No	No	Yes	No	No	No	Yes
DBC-LBC	No	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	No	No	Yes
DBC-RBC	No	No	No	No	No	No	No	No	Yes	No	No	No	No
EBC-LBC	No	No	No	No	No	Yes	No	No	No	Yes	No	Yes	No
EBC-RBC	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No	No
LBC-RBC	Yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	No	No	Yes

4.4.2 Discussion: Message framing in green technology crowdfunding per crowdfunding model

As answer to the fourth SRQ, this section displays how narratives of green technology crowdfunding having different underlying crowdfunding models are being framed. The cross-country analysis is performed to explore whether the underlying crowdfunding model changes the way a narrative of a green technology crowdfunding project is framed. The outcomes of the χ^2 -test of independence have revealed that the underlying crowdfunding model have significant impact on seven of the thirteen framing attributes; The impact frame, valence frame, including word of mouth, communicating the funding goal, the mood of the character, on whose behalf the narrative is written, and the applied sentiment. With these results at hand, the answer of SRQ4 states:

The underlying crowdfunding model of green technology crowdfunding projects influence the way narratives frame who suffers most from climate change and whether a authors of the narratives communicate negative language or positive language. In addition, the underlying crowdfunding model affects whether authors include word of mouth, communicate their funding goal, how they frame the mood of the character, on whose behalf the narrative is written and what sentiment is applied to persuade potential backers.

In the next sections all six combinations will be discussed by taking into account the results provided in Table 4.5. Appendix N displays the differences in observed framing attributes per combination of countries. For the framing attributes proven significantly different the deltas in Appendix N will be discussed individually in the next section. However, since this research is explorative only, no further evidence-based conclusions can be drawn upon why these frames seem to differ across the four countries. Follow-up research should be conducted to better understand the relations between nationality of a crowdfunding projects and the way it is framed.

DBC-EBC

Narratives from DBC projects more frequently write the narrative on behalf of the author (64%) compared to narratives from EBC projects (36%). For EBC projects on the other hand, it was more frequently unrevealed on whose behalf a narrative was written compared to DBC, with a difference of +25%. Secondly, every EBC project in the data sample uses a rational

sentiment, where DBC projects make equivalent use of both rational- and emotional sentiment.

DBC-LBC

DBC project and LBC projects seem to differently frame climate change in their green technology crowdfunding narratives; Statistically significant differences in the impact-, temporal- and valence frame have been observed. Authors of EBC projects systematically seem to refuse to communicate who is to suffer from climate change (95%), where authors of DBC profile both humans (46%) and nature (31%) as victims of climate change. None of the EBC projects make use of a mixed valence frame. In comparison, DBC projects do mix positive and negative message framing in a single narratives frequently (38%). EBC projects far more often communicate their funding goal (+40%), far less frame the character's mood (-54%), less frequently write for themselves (-56%), and rather use rational- (+46%) than emotional (-56%) language relative to DBC projects. Along with not mentioning the impact frame at all, all these differences suggest that EBC projects are really pragmatic, dry and business-oriented compared to DBC projects.

DBC-RBC

Apparently, there is much consensus between authors of DBC- and RBC projects. The only framing attribute having a significant differences between the two is how the mood of the character is being framed; DBC projects more often frame the character as being needy (+33%), where RBC projects prefer to leave out the mood of the character in 79% of the observations. A possible explanation for these findings could be their similarity in terms of complexity (Gierczak, Bretschneider, Haas, Blohm, & Leimeister, 2016), as illustrated in Figure 4.5. However, those are suggestions, where for now distinct conclusions cannot be drawn.

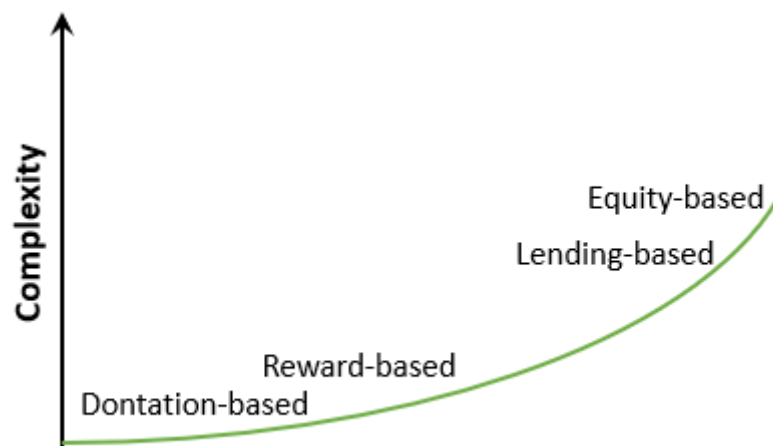


Figure 4.5: Complexity continuum per crowdfunding model (Gierczak, Bretschneider, Haas, Blohm, & Leimeister, 2016)

EBC-LBC

Between EBC- and LBC projects no significant differences have been observed for climate change framing attributes. Nonetheless, for the crowdfunding framing attributes three framing attributes significantly differ. One that really catches the eye is the inclusion of word of mouth in EBC narratives. Word of mouth is rarely applied by authors of green technology crowdfunding narratives: 4 out of 72. However, 3 of those 4 are found in narratives of EBC projects. Other framing attributes differing much between EBC- and LBC projects are on whose behalf a narrative is written of and the persuasion route. For the latter EBC projects seem to combine the two routes by both providing issue-relevant, product-specific information

(central route) and communicating values not directly related to the green technology (peripheral route). LBC projects rather use 46%

EBC-RBC

RBC projects more often make use of the impact frame than EBC, in particular framing nature as being the major victim of climate change (+47%). The EBC-RBC combination shows differences for using word of mouth and framing the mood of the project's character. The first, makes sense since, as explained previously, the EBC projects contain 3 of the 4 times word of mouth has been applied. For the latter, RBC projects write their narratives for themselves in most cases (83%), where for the majority of EBC projects it cannot be distinguished on whose behalf the narrative is written (64%).

LBC-RBC

The most significant differences in message framing of a green technology crowdfunding narratives are found in the LBC-RBC combination. By comparing LBC- and RBC projects it appears that seven of the thirteen framing attributes seem to differ. The biggest differences are found for the impact frame. LBC projects prefer not to frame the impacts of climate change in their narratives (95%). RBC projects on the contrary frame the impacts of climate change as being a threat to humans (34%) but mostly on nature (66%). 28% of the analyzed RBC projects were detected to frame both humans and nature as foremost victims of climate change. Besides, the crowdfunding framing attributes significantly deviating from each other in the LBC-RBC combination, are the same as for the DBC-LBC combination. Another indication that there model-complexity is associated with message framing of green technology crowdfunding narratives.

General remarks on the cross-model analysis

The results of the cross-model analysis have shown a significant difference for each combination including LBC regarding on whose behalf a narrative is written. In general, for the LBC projects it cannot be made up if the narrative is written for the author him- or herself, or for someone else; The differences compared to DBC (+56%), EBC (+31%) and in particular RBC (+77%) are considerably big. As explained briefly before, RBC and DBC projects only have one single framing attribute significantly varying.

4.5 Cross-purpose analysis

Before getting into the results and discussion of the third and final cross-analysis, a quick reference back to where this analysis derived from, is made. The cross-purpose analysis practically embodies a check. This check is to see whether for this research it is relevant to make a distinction between varying climate change definitions. Arguably, basing framing attributes on literature that might define climate change differently might imply that project narratives are framed differently.

For executing this check, the crowdfunding projects in the data sample will be assigned to two different classes; On the one hand, there are projects seeking funds for a technology that *directly* attempts to mitigate or reverse global warming. Where on the other hand, there are projects seeking funds for a technology that attempts to mitigate, reverse, or solve other climate change-related issues, e.g. plastic litter in oceans.

The null-hypothesis for the cross-purpose analysis is: *The purpose, as defined for this research, of green technology crowdfunding projects does not affect the way the narrative is framed.* The following sections provide the numerical results of the cross-purpose analysis succeeded by discussing the observed results.

4.5.1 Results: Cross-purpose analysis

Based upon the contingency table shown in Appendix O a χ^2 -test of independence is performed. This tests shows for each framing attribute whether a significant difference is observed between the two subsets. The results of the χ^2 -test of independence ran in SPSS are shown in Table 4.6.

Table 4.6: Cross-purpose χ^2 -test of independence results

	Attribution frame	Impact frame	Spatial frame	Temporal frame	Valence frame	Word of mouth	Gender	Goal communicated?	Mood of the character	Narrative written on behalf of...	Place of fund request	Persuasion route	Sentiment
χ^2	0,054	10,675	3,835	1,986	3,117	1,451	2,649	0,587	0,122	0,206	0,785	1,008	4,993
df	1	3	3	3	3	1	1	1	1	1	3	2	3
P-value	0,816	0,014	0,280	0,575	0,374	0,228	0,104	0,444	0,727	0,650	0,853	0,604	0,172
Significant?	No	Yes	No	No	No	No	No	No	No	No	No	No	No

Solely for the impact frame the test returns a significant dependency. For the other twelve framing attributes, none of the null-hypotheses can be rejected. Hence, apart from the framing attribute, the test concludes that whether a project's purpose is to directly battle global warming or not, does not affect the way the narrative is framed.

4.5.2 Discussion: Message framing in green technology crowdfunding per purpose

As answer to the fifth and final SRQ, this section displays how narratives of green technology crowdfunding directly being counter-global warming, or not, are being framed. Looking at the results of the χ^2 -test of independence, there is only one framing attribute found to differ significantly between projects directly attempting to battle global warming and projects that are not, as shown in Table 4.6.

The rationale for this cross-purpose analysis was that most literatures out of which the framing attributes have been extracted, hypothetically refer to *global warming* as *climate change*. However, in this research the term climate change goes beyond global warming only, as can be read in the introduction of this report. The fifth and final SRQ concerns that division of the data sample. After conducting the analysis, the answer on SRQ5 states:

Narratives of green technology crowdfunding projects being directly counter-global warming are not framed differently apart from framing who is to suffer most due to climate change.

That one framing attribute significantly deviating in projects being directly counter-global warming thus is the impact frame. Shown in Appendix P, projects not directly attempting to battle global warming frame both nature (46%) and humanity (31%) as who is to suffer from climate change. For projects directly attempting to battle global warming the majority do not frame climate change impact at all: 64%.

4.6 Closure of the chapter and introduction to the next chapter

Chapter 4 presented all the results of the conducted analyses. Research would not make much sense if only numerical output is presented to the reader. Therefore, each of the analyses' output have been discussed to explain what these numerical values entail. The next chapter will communicate the limitations involved throughout the entire research and how these might have an impact on the research's outcome and decision-making during execution of the research.

5 LIMITATIONS

Several limitations are present throughout the research. Limitations have been present during choices made in the research in general, and have been present in execution of the analyses part of this research. The following sections provide an overview of these limitations and how these have interfered with the research and its outcomes.

5.1 General restrictions

The first and foremost limitation that this research possesses is time. Bound to strict timetabling of the TU/e, the research must be conducted in a time span of 16 weeks, with a possibility to get a maximal deferment of 8 weeks. This is not a limitation per se, however, the research and analyses are executed by merely one person, meaning that data inclusion is limited to some extent. Directly related to this, is the most prominent limitation of this research; As it will be explained further in this report, the data sample used for the analyses contain project narratives, in which four countries of origin, and the four different types of crowdfunding models are equally represented. Ideally, this is true, and the results of the analyses are fully credible. However, it has not been succeeded to do so, because of numerous access limitations or simply because the required data does not exist. As shown in Table 2.2, the data sample does not contain donation-based crowdfunding projects from Norway and lending-based crowdfunding projects from Norway and the United States of America.

Secondly, the narratives of green technology crowdfunding projects are amassed from numerous platforms, varying vastly in professionalism, formalism and context. However, considering the research's exploratory nature, this is not expected to be a main constraint. Furthermore, some reliabilities are built in the researches structure to assure accuracy. These are explained in more detail in the research design, provided in Chapter 2. However, the analyses remain subject to some forms of interpretation flaws since the qualitative analyses will all be done manually. This could have been avoided by using double coding. However, due to time limitations this has not been considered feasible for this research.

5.2 Limitations of the analyses

Apart from some general restrictions of the research itself, several limitations exist during performance of the analyses. The following sections will address these individually.

Varying lengths of the narratives

The narratives being present in the data sample are not equal in length. Logically reasoning, the probability of finding a specific framing attribute is larger when a narrative is longer and more elaborate. Vice versa, when a narrative is narrow and limited in length, the probability of observing a framing attribute is lower. In this research's data sample, the standard deviation of narrative-length expressed in words is approximately 870, with an average word-count of approximately 838. Expressing the differences of length in pages the standard deviation is 5.93, with an average length of 5.26 pages.

Narrative entirety versus partiality

During the analyses of this research the narratives of green technology crowdfunding have been searched for framing attributes. However, this was done in a binary way. That is, a narrative either contained a specific option of a framing attribute (1) or it did not (0). A limitation that gets involved is that an entire narrative might not be very accurately represented in the outcomes of the analysis. For example, narrative of project GFM_DBC_USA_1 overall has a clear emotional tone. However, if distinctly seeking for emotional or rational phrases, both sentiments are present. Consequently, the analysis results in appointing that project as having a mixed sentiment. Although this is not untrue per se, it might not entirely cover the load of

that specific narrative. A possible remedy for overcoming this limitation is to count words or sentences carrying a specific framing attribute to indicate presence of a framing attribute in percentages. However, due to time limit of this research that is considered infeasible.

Saying versus

Qualitative research, as communicated previously, inevitably retains some portion of subjectivity. One of this research's improbity is closely related to this subjectivity; Discerning insinuations rather than distinctly and exactly employing a specific framing attribute. One great example of this is the following quote by an author who tries to seek donations for his mobile application that aims to reduce CO₂ emissions by supporting and stimulating efficient driving:

“Mind you, if we don’t collectively succeed in fighting climate change, we might get some seriously wet feet here in Amsterdam and I certainly will not be able to visit the Greenland that I knew and cherished so much as a kid.” – Author of KS_RBC_NL_4

What the author roughly says here is that, because of humans excessive CO₂ emissions, he perhaps won’t be able to ever see his beloved Greenland in the conditions he has known the country in, reasonably, because of the rising temperatures and sea levels. Nonetheless, the author does not actually claim this; the author rather insinuates it. Another example that perfectly illustrates this concern is found in data individual KS_RBC_UK_4, as it says:

“The idea is to help transform an existing automobile market (that was poisoned by oil industry for decades) by creating environment friendly e-COBRA sportscar. Same power, same classy looks, but ZERO pollution.” – Author of KS_RBC_UK_4

Literally what the author claims is a causal inference in which the oil industry has poisoned the automobile industry and therefore an environment-friendly non-emitting sports car has been created. Arguably, what the author intends to narrate, is that the oil industry caused excessive greenhouse gas emissions through the automotive industry. However, the author doesn’t factually say this, nor does the author literally articulate that the issue regards greenhouse gasses. Nonetheless, one could or could not assert that this quote contains the attribution frame of climate change being human-caused. The dilemma that arises here is where to draw the line between finding an actual frame and merely getting the idea that the author is rather suggesting something, rather than actually claiming it. Since this thin line appears very shady and often present in grey areas, it unfortunately remains exposed to subjectivity to some extent. Where the above quote from just one narrative is given, this issue has been faced numerous times in multiple narratives during the analyses.

Similar as for specific framing attributes, as explained above through portraying the impact frame, many other frame attributes are exposed to the same dispute. A rather questionable attribute that has been encountered often is the “place of fund request”, in which it is analyzed at what part of the narrative an actual request for donation, lending, or equity-investment is made. Where yet the query of defining begin, middle and end itself is already dubious, defining “request for funding” is vastly debatable as well. Illustrating this flaw can be done by providing a few examples in Table 5.1.

Table 5.1: Examples of attribute fuzziness

Example	Author	Quote	Classified as fund request?
Example A	CH_DBC_USA_3	<i>"Please make a donation and support this global collaboration!"</i>	Yes
Example B	CH_RBC_UK_1	<i>"Pledge an amount to help me achieve my goal."</i>	Yes
Example C	KS_RBC_UK_3	<i>"PLEDGE. Any amount is appreciated, but the more you give, the more people on Greece we can help!"</i>	Yes
Example D	KS_RBC_NL_4	<i>"Help DriveTag go global!"</i>	No
Example E	KS_RBC_UK_5	<i>"Any contribution will be gratefully received. We look forward to sharing our journey with you every step of the way."</i>	No

Clearly, Example A and Example B would assumedly be classified as a *request* by many. However, Example C is already far more indistinct; Yes, the author does insist on requiring your monetary support, but the question is if it does actually make a request. Equivalently, Example D and Example E neither make a distinct request for an investment to the reader. Example A-C are all ultimately elected as fund request, where Example D and Example E are not. This remains undeniably arguable. Moreover, merely four examples are displayed here. Though, obviously there is a severe diversity across the data set. Classifying a specific phrase in a narrative as an actual request is therefore an extremely fuzzy come about. This section solely addressed two framing attributes (impact frame, place of fund request). However, to classify or not to classify an insinuation as one of the attributes occurs in each and all of them. To not to exceed imposed reporting dimensions, these are not all elaborated.

Rationale of the crowdfunding project initiator

Despite the application of the decision tree (see Figure 2.3) for data collection and inclusion, some data variance remains present. One of these is the aim of the authors, i.e. their underlying rationale of their crowdfunding efforts. That is, some authors sincerely desire to contribute to climate change mitigation, where others merely focus on conveying their product to a success. A difference in underlying rationale might very well have some impact on the narratives of these projects regarding their linguistic style usage and the way of framing. An example that very much displays this matter can be found by comparing the narratives of projects KS_RBC_NO_3 and CH_RBC_UK_1. The first, tries to assemble capital for an e-bike to get people equipped with the fanciest e-bike, rather than getting people taking a bike instead of a car to reduce greenhouse gasses. The latter on the other hand tries to reduce plastic in our oceans. Two very different projects, both included in the data.

Table 5.2: Difference in project rationale and its possible impact on framing attributes

Climate Change framing attribute	KS_RBC_NO_3	CH_RBC_UK_1
Spatial frame	No	Yes (=Global)
Temporal frame	No	Yes (=Near future)
Valence frame	No	Yes (=Negative)
Impact frame	No	Yes (=Nature)
Attribution frame	No	Yes (=Human activity)

Comparing their analysis results, as presented in Table 5.2 above, indeed a significant difference is found. Nonetheless, it is inevitable that alike limitations stay present in the analyses, since any evidence regarding the author's rationale is absent and solely suggestions can be made about these rationales.

Platform owners as co-author

In most cases, each project's narrative from the same crowdfunding platform upholds a similar structure. For example: Introduction, Brief explanation of the product, About the author, Risks and challenges. Whenever an entrepreneur is obligated to adhere a certain blueprint, the narrative is affected to some extent. To get this suspicion confirmed, this issue was submitted to the COO of Monner.no, saying that a narrative's structure on his platform is "*Always the same*". When being asked if the narratives are written by entrepreneurs solely, he replied:

"[...] we try to make the funding customer, as we call it, to do most of the job themselves, but we always like to put the last checks. So, it kind of varies. If the customer has written a good campaign himself, then it turns out that we don't have to do that much. But in other cases, we will do quite a lot." – COO of Monner.no

Bottom-line, this might include that some of the narratives included in this research and their applied framing attributes are indeed to some extent influence, or even written, by the platform owners. Despite this might be true in some cases, it is not known for what platforms and what projects this is true, and to what extent this might have occurred. Therefore, it was not feasible to circumvent his problem entirely.

Variety in "greenness"

How green is green? Though for an actual color this might be answered by consulting a colors range, it becomes far more complex trying to find out how much a green technology is actually contributing in solving climate change. This limitation of the analysis emerges as a project's content holds a strong relation with framing attributes used in the narrative. A frame in communication can only be defined in relation to a specific issue or event, even if the same issue or event might evoke alternative frames over time (Chong & Druckman, 2007, p. 106). Thus, a diversity in "greenness" of a project across data included in this analysis, might bring along alternative framing attributes, even though all data is equally arrayed as being "green technology". Nonetheless, there has no efforts been undertaken, for this research, on both defining a project's "greenness" and utilizing this over the data and the analysis, consequently.

5.3 Chapter closure and introduction to the next chapter

In this chapter the limitations involved in the research and analyses have been demonstrated. In this way objectivity and transparency is provided to the reader. The next chapter is the last chapter of this Master Thesis. In that chapter conclusions will be drawn on the all findings that

have been gathered by execution of the research. In addition, it will explain how these findings will be used in practice for CoolCrowd, and what future research is required.

6 CONCLUSION

As final part of this research, this chapter will conclude upon all findings being made during the research. The research not only generated an update on existing theories, it also contains several practical implications. Since the exploratory nature of this research the conclusions that will be made are majorly observations that have been found during the exploring. For that reason, follow-up research should be conducted using this research as starting point to build hypotheses upon.

6.1 Main findings

The introductory chapter stated the RQ and the SRQ. Throughout this report, answers to the five SRQs have been established. All five SRQs jointly form the answer to the RQ. The research departed from an observed gap in literature. This gap was that lots of literary endeavors have been made on two things; Firstly, many studies investigated how crowdfunding narratives are being framed. Secondly, many studies investigated how climate change is being communicated in order to get people engaged to mitigate climate change. Both of these theoretical streams come up with a hand full of framing attributes. However, to what extend those provisional sets of framing attributes are present in green technology crowdfunding narratives – as combination of the two theoretical fields – has been left unstudied. The provisional list of framing attributes, extracted from the two theoretical streams are both present in large quantities; Some framing attributes are present very frequently, others only sporadically and some framing attributes have not been found once.

6.1.1 Narrative framing in green technology crowdfunding

Authors of green technology crowdfunding narratives do not frame climate change as being induced by a natural process. The majority of the studied narratives did not mention who is to blame for climate change (attribution frame) at all. If the author decided to do so, it indicated human activities as the cause for our change environment. Who is to suffer most from our changing climate (impact frame) is not mentioned by the authors in most cases. When the narrative did communicate the main victims both humans and nature itself was indicated as being that foremost victim. In some instances, both humans and nature were addressed as victims within a single narrative. Climate change issues are often related to a specific location or region. However, the application of the spatial frame in green technology crowdfunding differs from the original spatial frame as extracted from the literature; Authors of green technology crowdfunding narratives proclaim their technology as solution to climate change for a specific location or region. This makes sense since it is the crowdfunding narrative in which an entrepreneur tries to pitch their idea. Absent in the vast majority of the narratives is if authors frame climate change as an issue of nowadays, the near future, or the far future (temporal frame). The conclusion can be made that authors of green technology crowdfunding projects do not frame when climate change is or becomes urgent. Several contradicting findings were observed in literatures making claims on whether to use positive or negative valence in a narrative to increase the persuasion effect. This study concludes that both valences are applied by authors of green technology crowdfunding projects, although these authors seem to prefer positivity in their narrative. That is, the narratives rather communicate the opportunities or potential benefits of the presented green technology than using threat-inducing language pointing out what might happen if their crowdfunding campaign might not succeed.

Despite being recommended to add to the narrative according to related literatures, hardly any green technology crowdfunding narrative includes word of people already backing the project (*Word of mouth*). The narratives that do have *Word of mouth* included almost all have an

equity-based underlying crowdfunding model. Similarly, indicating the author as being female (*Gender*) is barely applied. Obviously, the question that arises is whether the authors of green technology crowdfunding narratives are indeed females; True or untrue, only a few narratives have indicated that the author is a female. Contradicting claims have been made in literatures regarding whether a narrative should address the funding target (*Goal communication*). Some argue that money-related language reduces crowdfunding success, where others claim that potential backers prefer to see the targeted funding level is addresses and explained. The majority of the authors of green technology crowdfunding narratives do not mention the funding target: 65%, where 35% of the authors refuse to do so. The majority of the narratives do not frame the character – standing subject in the narrative – as being heroic (mood of the character). Being heroic in this context means being cheerful, brave or hard-working. Some authors frame the character as being needy, but the majority prefer not to frame the mood of the character at all. Literature regarding crowdfunding narrative claim that writing the narrative on behalf of someone else is a very effective approach to increase funds. The conclusion that can be made is that authors of green technology crowdfunding do not write the narrative on behalf of someone else. That is, the authors of the analyzed narratives are either writing for a campaign which they are being part of themselves, or it could not be determined whether or not the author wrote the narrative for him- or herself, or someone else. Studies have found that persuasion efforts are doing through either the central- or the peripheral route (persuasion route). Authors of green technology crowdfunding narratives both provide issue-relevant, product-specific information (central route) and information portraying values not directly related to their green technology (peripheral). However, persuasion via the central route is, on purpose or not, preferred by these authors: 69%. A common technique to convince potential backer to make a fund is to distinctly ask the reader for a fund. The location within the narrative in which that request is committed (place of fund request), the beginning, middle or end, is not preferred over one another. Moreover, the greater majority of authors decides not to commit such a request at all. Alike the valence frame, several contradicting claims regarding what sentiment to adopt in the narrative. Authors of green technology crowdfunding narratives strongly prefer (78%) to include factual, evidence-based language i.e. related to the technology's potentials or economic context of the crowdfunding campaign.

Part of the theory inducing approach of this research is the definition of newly found framing attributes. These new attributes complement on the framing attributes extracted from the two literature streams. Jointly these form the set of framing attributes for green technology crowdfunding narratives. The first expansion of the set of framing attributes is the following; Some authors of green technology crowdfunding projects frame their campaign as a unique opportunity that a potential backer might not miss. In this way, the author is more or less swapping the roles of doing a favor, by inducing an urge of hurry to potential backers. This framing attribute is only found in projects with equity-, or lending-based crowdfunding as underlying model. Complementary to this, is to portray investing in the project as an opportunity for paying off a debt. This could induce that a potential backer feels it is “not more than normal” to commit a fund or investment. The literatures studying crowdfunding narratives frames mostly included donation- or reward-based projects in their data sample. This research included projects having any of the four different total four crowdfunding models. Mainly within equity-based crowdfunding projects, all involved risks involved when making an investment, or risks of the technology itself. Therefore, the third observed expansion of the provisional set of framing attributes is to communicate risks involved. Strongly related to the climate change framing attributes (see Appendix E) is the fourth added framing attribute: Self-evident framing. Several of the climate change framing attributes are not applied in narratives despite being vastly counter-climate change. The last addition to the provisional set of framing attributes is communicating a plan of action, often in an elaborate fashion. The next sections will formulate

the conclusions that are drawn upon the three cross-analyses; the cross-country-, cross-model- and cross-purpose analysis.

By referring back to the inductive research process this research followed, the following conclusions can be made; This research started with constructing a set of framing attributes from two literature streams, called the provisional set of framing attributes. After analyzing seventy-two narratives of green technology crowdfunding projects a modified set of framing attributes is created. Appendix H shows an overview of the modified set of framing attributes used for framing the narratives of green technology crowdfunding projects.

6.1.2 The impact of nationality on green technology crowdfunding narrative framing

Starting with the cross-country analysis, the results have revealed whether a project's nationality and the way authors frame their narrative associate. The nationality of a green technology crowdfunding project statistically correlates with if climate change is framed as being a local, regional or global problem, and if those problems are occurring right now, will occur in the near- or in the far future. In addition, the nationality of a green technology crowdfunding project has an impact on if the funding goal is communicated or not, and whether the author attempts to persuade potential backers with a rational-, emotional-, or mixed sentiment. Comparing the data of the six combinations that can be made, resulted in several significant difference. The most differences were found between narrative framing of green crowdfunding projects from Norwegian and Dutch. Foremost, Norwegian- and Dutch authors seem to differ in framing when climate change is occurring (*temporal frame*), and where climate change-induced issues are taking place (*spatial frame*). To the contrary, none of the framing attributes in the provisional set is applied significantly different when comparing narratives of green technology crowdfunding projects from the Netherlands and the United Kingdom. Narratives originating from the United States of America contain much sentiment, in particular a rational sentiment (94%). In short, the application of sentiment in a narrative is more excessively used by Americans compared to the Dutch, Norwegian and British. Furthermore, this study has pointed out that across the six countries, there is much consensus on how to frame climate change problematics in a green technology crowdfunding narrative. No statistically significant evidence is found on the impact of nationality on whether *word of mouth* is included in a narrative. The same counts for the framing attributes *gender*, *mood of the character* and the *persuasion route*. All three framing attributes do not significantly deviate in any of the six country combinations, and thus it cannot be concluded that nationality affects the application of these framing attributes. The procedures and scope of this research does not allow any conclusions to be made on causal inferences upon differences between countries in terms of significantly deviating framing attributes.

6.1.3 The impact of the crowdfunding model on green technology crowdfunding narrative framing

Subsequently, the underlying crowdfunding model of green technology crowdfunding projects statistically associates with the way narratives frame who suffers most from climate change and whether a authors of the narratives communicate negative language or positive language. In addition, the underlying crowdfunding model apparently associates with whether authors include word of mouth, communicate their funding goal, how they frame the mood of the character, on whose behalf the narrative is written and what sentiment is applied to persuade potential backers. By comparing each model to one another the conclusion can be made that the underlying model to a larger extend affects how a narrative is being framed compared to a project's nationality. Narratives of donation-based project are considerably differently framed compared to lending-based project narratives. On the contrary, compared to reward-based crowdfunding, narratives from donation-based projects are very similar, with only one framing

attribute being framed significantly different: *mood of the character*. In line with these two findings is that lending-based projects and reward-based projects show much dissimilarity in narrative framing as well. Lending-based projects and equity-based projects do not significantly deviate in framing climate change, though, several dissimilarities have been detected in applying the crowdfunding framing attributes.

6.1.4 The impact of the purpose on green technology crowdfunding narrative framing

This research concludes that whether a project is directly attempting to battle global warming by means of their technology, or whether a project does not, only shows very limited statistic associations with how the narrative is framed. Narratives of green technology crowdfunding projects being directly counter-global warming solely differ in framing who is to suffer most from climate change consequences. Besides, no other framing attributes have been explored that framed significantly different among the two categories of projects. Based on these results, it can be concluded that for most framing attributes, it does not matter whether a framing attribute is derived from literature of authors that hypothetically have a different definition of climate change.

6.2 Practical implications

The results of this study form the starting point of a sequence of new empirical research cycles. This research has provided the ingredients for setting up hypotheses which on their turn can be tested so novel evidence-based theories can be generated. Businesses, or projects, like CoolCrowd, can complement on this research by performing several new studies; Firstly, businesses could benefit of having a thorough understanding of how narrative framing relates to green technology crowdfunding performances. However, to increase the credibility and practical contribution of such as study, the adjusted set of framing attributes require to be tested empirically, and if applicable, require to be adjusted via several empirical iterations in advance. Therefore, the first main recommended future research states:

Follow-up research 1: To conduct (several) empirical research iterations with formulating new hypotheses upon this research's main findings as starting point.

As this empirical research has undergone several iterations, a reliable evidence-based set of framing attributes for green technology crowdfunding has been established. In succession, an extra quantitative research should be conducted. That research should provide proper insights in the relations between narrative framing of green technology crowdfunding projects and crowdfunding performances.

Follow-up research 2: To conduct a quantitative analysis on how the application of specific framing attributes correlates with crowdfunding performances.

Important for the research as defined above is the definition of successfulness in green technology crowdfunding. Practical implications within this field of research become more effective when another, third, follow-up research will be conducted; One of the most notable lacks in crowdfunding narrative and message framing literature is the definition and analysis of crowd categorization. Although lots of studies have researched the diversities of the projects and the entrepreneurs, a focus on the audience seems almost untouched. As indicator, some literatures, e.g. Khut (2016) and Bi et al (2017), shine in some sense a light upon the relation with the crowd's characteristics or culture, and the narrative that would be most appealing to them. Therefore, the third follow-up research states:

Follow-up research 3: To study the dynamics of "the crowd" by finding and defining categories within the crowd and explore how narrative framing influences funding behavior of (potential) backers.

Three pieces of new knowledge are available after conducting the three follow-up researches as suggested above: 1. Evidence-based information on what framing attributes are present in green technology crowdfunding; 2. The relation between application of those framing attributes to crowdfunding performances in general; And 3. How different classes of the crowd require a different approach in terms of green technology crowdfunding narrative framing.

6.3 Managerial recommendations

Referring back to the very beginning of the Master Thesis, the narrative accounts for nearly all communication between entrepreneur and potential backer. Therefore, the main managerial recommendation states as follows: CoolCrowd should combine the three sets of newly created knowledge as formulated in the previous section. In this way, CoolCrowd, or any other instance or individual considering a green technology crowdfunding project, can be greatly effective by writing their narrative according to the new knowledge. Ultimately, this research forms the fundament for future ground-breaking green technologies contributing to our worldwide journey towards a sustainable future. For CoolCrowd's concern, that would mean to succeed in equipping Norwegian farmers with green technologies to mitigate the excessive greenhouse gas emissions by the Norwegian agricultural industry, by means of crowdfunding efforts. Perhaps, one day, Norway might be the example other national- or continental administrations need to follow. On to a sustainable future!

6.4 Scientific contribution

This study departed from a detected gap within the literature. As explained, numerous literatures have been written on both message- or narrative framing in contexts of climate change communication and crowdfunding. A mutual area of these two literature streams however, was found unstudied. It is this mutual area that has now been covered for the first time and is shown in an overview in Appendix H. This academic principle has been illustrated below in Figure 6.1. Scientific research to narrative framing of green technology crowdfunding projects is still far away from saturation. The findings and conclusions drawn by this research are merely a starting point for successive research. The exploratory nature of this research has led to a very novel theory that requires several subsequent empirical iterations

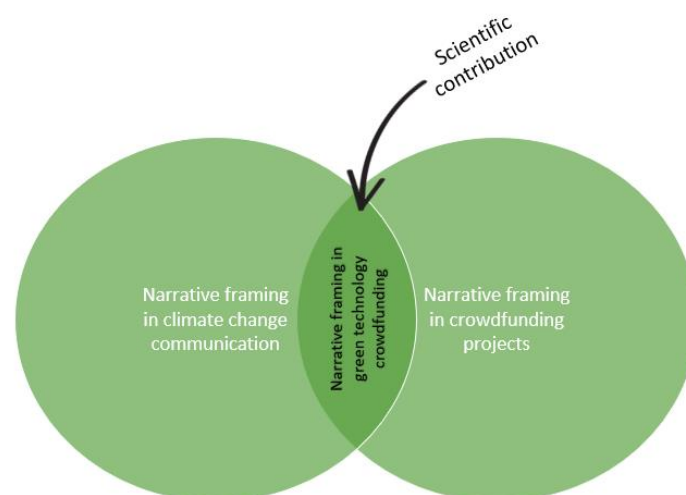


Figure 6.1: Illustration of the academic contribution

6.5 Additional future research

Apart from the main recommended follow-up researches, several other future research opportunities have been discovered throughout the research. Firstly, as indicated in the limitations sections, the analyses have been conducted in a binary fashion instead of thoroughly investigating how much percent of a narrative contains a specific framing attribute. When time allows, this should therefore be done to optimize conclusions regarding narrative framing of green technology crowdfunding. Secondly, as is done for *place of fund request* a future research could explore the positions of each framing attribute throughout a narrative. Again, this would increase accuracy and depth of the insights regarding narrative framing within this context. Another future research might be to study the actual influence of platforms on narratives' content, configuration, and thus, narrative framing attributes. Yet another potential research might be to research cooccurrence of multiple framing attributes. That is, to study combined presence of framing attributes as such that if framing attribute X is present, see in how much percent of the observed instances also framing attribute Y was present too. Finally, this research presents lots of numerical results i.e. regarding comparison of narrative framing between several countries or crowdfunding models. Many deviations have been identified. However, because of the exploratory nature of this research, no further conclusions have been formulated since no evidence-based research concerning these detected differences has been conducted. Therefore, a meaningful future research would be to investigate the underlying causal inferences of the observed differences between countries and crowdfunding models.

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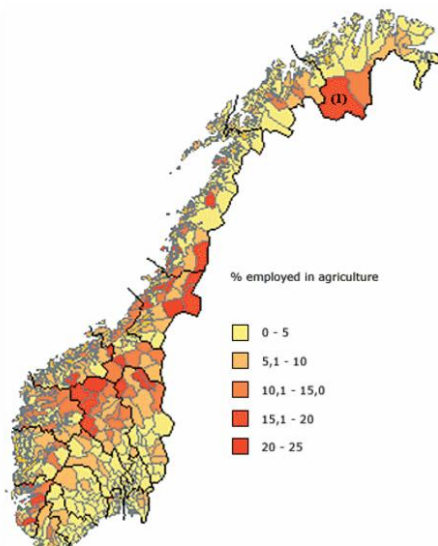
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APPENDICES

Appendix A: Agriculture in Norway

Norwegian soils are approximately for 3% occupied by agricultural land (+/- 2.2 million hectares), utilizing 84,635 farms all across the country (Advameg Inc., 2018). A study by Fernández (2008) has created an outline of agriculture in Norway. Reportedly, Norway is not an outstanding agrarian country. Despite its geographic location close to, or even beyond the Arctic Circle, it has a mild climate, allowing agriculture functioning, because of the effects of warmer golf streams along the 20,000-kilometer-long coast. Representing 1.6% of the Norwegian GDP, which is not significantly much, compared to other European countries. Most of the agriculture's production in Norway is marketed and consumed within the country's boundaries, making the country thoroughly self-sufficient. Prominences of these productions are meat, eggs, cereals, temperate fruit and vegetables, and fish (Fernández, 2008). The figure below illustrates the distribution of employment within the agriculture industry over Norway's landscape, demonstrating that this industry stretches out all over the country, and represents a significant share of the Norwegian workforce. In the table below, some interesting facts and statistics are provided regarding the Norwegian agriculture.



Product	Volume (in tonnes)	% of national consumption
Milk	1559 (million liters)	99%
Beef meat	90	97%
Sheep/lamb meat	23	n/a
Pig meat	102	n/a
Chicken meat	43	n/a
Eggs	47	98%
Cereals	124	36%
Potatoes	380	83%
Vegetables	161	58%
Fruit and berries	71	18%
Sugar and honey	1.25	3%

(retrieved from <http://odin.dep.no>)

Despite this research's context and its strong relations with CoolCrowd, and therefore (Norwegian) agriculture, this research and the data to be used will be beyond this industry's boundaries. First of all, green technology crowdfunding is still a niche market, let alone narrowing it down further with industry-specific limitations. In addition, any green technology is not precluded for application in this industry per se, and therefore worthy to be included in an explorative research like this.

Appendix B: Data sample overview

Code	Title	Goal	Funded	Backers	Success?	%target
KS_RBC_NL_1	SpaceTrade app	€ 30.000,00	€ 10,00	1	No	0%
KS_RBC_NL_2	Instalivery	€ 150.000,00	€ 51,00	3	No	0%
KS_RBC_NL_3	Magnet Energy Creator	€ 300,00	€ 353,00	18	Yes	118%
KS_RBC_NL_4	DriveTag	€ 25.000,00	€ 6.186,00	57	No	25%
KS_RBC_USA_1	Biocycler	€ 22.072,00	€ 7.366,78	61	No	33%
KS_RBC_USA_2	ReVolt3000	€ 8.828,78	€ 16.702,24	73	Yes	189%
KS_RBC_USA_3	Saving Water	€ 8.828,78	€ 286,66	5	No	3%
KS_RBC_USA_4	Urban Wind Turbines	€ 220.720,00	€ 2.823,44	56	No	1%
KS_RBC_USA_5	Diesel Fuel Sulfur Reduction Unit	€ 44.143,90	€ 11,47	3	No	0%
KS_RBC_USA_6	Clean Bin	€ 4.414,39	€ 508,04	23	No	12%
KS_RBC_USA_7	Mega Floating Platform	€ 264.863,00	€ 19,40	3	No	0%
KS_RBC_USA_8	Wind Energizer	€ 8.828,78	€ 614,88	17	No	7%
KS_RBC_USA_9	WARP	€ 331.079,00	€ 1.561,45	10	No	0%
KS_RBC_UK_1	Retrofit Cavity Wall Trays	€ 56.085,00	€ 33,72	3	No	0%
KS_RBC_UK_2	Green Oil EcoSpray	€ 8.412,75	€ 10.235,58	233	Yes	122%
KS_RBC_UK_3	Reusable Eco Wool	€ 6.730,20	€ 69,67	3	No	1%
KS_RBC_UK_4	Cobra e-Drive Smartsnake	€ 28.042,50	€ 3,37	3	No	0%
KS_RBC_UK_5	The Environmental Answer to Herbicide	€ 16.825,50	€ 78,68	5	No	0%
KS_RBC_UK_6	Paperless Manuals and Guidebooks	€ 5.608,50	€ -	0	No	0%
KS_RBC_UK_7	GreenLawn	€ 4.711,14	€ 1.358,41	30	No	29%
KS_RBC_NO_1	KitchEco	€ 1.039,97	€ 75,20	2	No	7%
KS_RBC_NO_2	MyMiti	€ 10.399,70	€ 4.188,51	92	No	40%
KS_RBC_NO_3	The Schanuzer Ebike	€ 39.518,86	€ 47,17	2	No	0%
AB_LBC_UK_1	Merseyside Assured Homes	€ 4.767.225,00	€ 4.775.631,78	Unknown	Yes	100%
AB_LBC_UK_2	Atlantis Future Energy	€ 4.823.310,00	€ 4.832.447,03	Unknown	Yes	100%
AB_LBC_UK_3	Alternative Energy Developments	€ 874.926,00	€ 876.434,13	Unknown	Yes	100%
AB_LBC_UK_4	ILI Pump Storage Hydro	€ 3.813.780,00	€ 3.820.023,03	Unknown	Yes	100%

AB_LBC_UK_5	Celtic Renewables Grangemouth	€ 4.935.480,00	€ 4.921.088,49	Unknown	No	100%
AB_LBC_UK_6	United Downs Geothermal	€ 4.935.480,00	€ 4.943.938,45	Unknown	Yes	100%
AB_LBC_UK_7	Atlantis Ocean Energy	€ 4.823.310,00	€ 4.831.914,13	Unknown	Yes	100%
AB_LBC_UK_8	GDFC Services	€ 4.711.140,00	€ 4.719.697,94	Unknown	Yes	100%
GC_LBC_NL_1	Zonnepark Viervelaten Bedrijvenronde	€ 273.000,00	€ 273.000,00	48	Yes	100%
GC_LBC_NL_2	AvriSolar	€ 990.000,00	Unknown	Unknown	Yes	#WAARDE!
GC_LBC_NL_10	Wijkwindmolens Dorkwerdersluis	Unknown	Unknown	Unknown	Yes	#WAARDE!
GC_LBC_NL_6	Uw eigen zonnepaneel op Zonnepark Viervelaten	€ 126.000,00	€ 126.000,00	29	Yes	100%
GC_LBC_NL_4	Schoonschip	€ 285.000,00	€ 285.000,00	108	Yes	100%
GC_LBC_NL_5	NDSM Scheepsbouwloods	€ 225.000,00	€ 225.000,00	111	Yes	100%
GC_LBC_NL_7	Iederzon LED Amsterdam	€ 75.000,00	€ 75.000,00	66	Yes	100%
GC_LBC_NL_8	Zonnepark de Groene Weuste	€ 301.550,00	€ 302.000,00	53	Yes	100%
GC_LBC_NL_3	Viervelaten	€ 126.000,00	€ 126.000,00	29	Yes	100%
JG_DBC_UK_1	Nurld Machine	€ 616,94	€ 1.291,94	55	Yes	209%
JG_DBC_UK_2	Water Filtration System	€ 11.217,00	€ 563,95	1	No	5%
JG_DBC_UK_3	Renewable biogas	€ 53.841,60	€ 590,96	Unknown	No	1%
OPC_DBC_NL_1	Start2Stop	€ 50.000,00	€ 35.363,00	58	No	71%
OPC_DBC_NL_2	Groene Bolderkar	€ 1.500,00	€ 4.705,00	39	Yes	314%
OPC_LBC_NL_1	FD4x4	€ 285.000,00	€ 361.316,00	207	Yes	127%
OPC_LBC_NL_2	Wasbundles	€ 200.000,00	€ 205.500,00	164	Yes	103%
OPC_RBC_NL_1	Formic Acid city bus	€ 10.000,00	€ 10.949,00	96	Yes	109%
GFM_DBC_USA_1	Mesa Ridge Car Wash	€ 882.878,00	€ 308,78	7	No	0%
IGG_RBC_USA_1	Local Carbon Network	€ 132.432,00	€ 37.926,01	81	No	29%
FI_EBC_NO_1	Future Lab	€ 155.991,50	€ 89.334,76	29	No	57%
FI_EBC_NO_2	Baerekraft og CO2	€ 38.478,89	€ 3.705,21	4	No	10%
FI_EBC_NO_3	Solenergi for bolig og naering	€ 155.995,50	€ 22.688,36	26	No	15%
FI_EBC_NO_4	Ocean Energy AS	€ 311.991,00	€ 44.954,13	32	No	14%
BI_RBC_NO_1	Green Plastic	€ 623,98	€ 391,87	15	No	63%
SPL_RBC_NO_1	Ren Energi for Allen	€ 1.039,97	€ 257,82	9	No	25%
WF_EBC_USA_1	Curtiss the Tesla of Motorcycles	€ 882.878,00	€ 114.364,66	60	No	13%

WF_EBC_USA_2	Liquidpiston	€ 882.878,00	€ 453.726,11	269	No	51%
SB_EBC_NL_1	Madaster	€ 500.000,00	€ 704.380,00	217	Yes	141%
OPC_RBC_NL_2	Coral Garden	€ 5.000,00	€ 12.046,00	74	Yes	241%
CH_DBC_USA_1	Toledo Solar Project	€ 22.072,00	€ 21,95	1	No	0%
CH_DBC_USA_2	Ocean Energy for New England	€ 17.657,60	€ 307,27	4	No	2%
CH_DBC_USA_3	Zero-Net Energy Vessel	€ 4.414,39	€ 702,41	7	No	16%
CH_DBC_USA_4	SunSaluter	€ 4.414,39	€ 1.755,20	1	No	40%
CH_DBC_UK_1	Wind Turbines Sheffield	€ 159.281,40	€ 28,04	1	No	0%
CH_DBC_UK_2	Disposable Plastics	€ 112.170,00	€ 319,67	14	No	0%
CH_RBC_UK_1	Ocean Plastic	€ 3.365,10	€ 1.818,34	80	No	54%
CH_DBC_NL_1	Sustainable Taxi	€ 3.000,00	€ 5,00	1	No	0%
CRC_EBC_UK_1	Water to Go	€ 112.170,00	€ 31.598,29	55	No	28%
CRC_EBC_UK_2	Novaton	€ 336.510,00	€ 153.515,86	50	No	46%
CRC_EBC_UK_3	Vclean Life	€ 280.425,00	€ 60.526,93	45	No	22%
CRC_EBC_UK_4	Recycling Technologies	€ 1.458.210,00	€ 1.162.187,76	445	No	80%

Appendix C: Overview of platforms, models and countries in the data sample

Platform	Abbreviation
Abundance	AB
Bidra	BI
Chuffed	CH
CollinCrowdfund	CC
CrowdCube	CRC
Fokeinvest	FI
GoFundMe	GFM
Greencrowd	GC
IndieGoGo	IGG
JustGiving	JG
Kickstarter	KS
OnePlanetCrowd	OPC
Symbid	SB
WeFund	WF

Crowdfunding model	Abbreviation
Donation-based crowdfunding	DBC
Equity-based crowdfunding	EBC
Lending-based crowdfunding	LBC
Reward-based crowdfunding	RBC

Crowdfunding model	Abbreviation
Norway	NO
The Netherlands	NL
United Kingdom	UK
United States of America	USA

Appendix D: Crowdfunding narratives framing attributes

Framing attributes	Operationalized variables (options)	Description	Source(s)
Sentiment	Emotional	Inclusion of emotional words emphasizing on the need for funds; Inclusion of backing for money; Inclusion of attempts to appeal to someone's conscience (e.g. to arouse a feel of guilt/responsibility), or to let one feel heroic, cool, or life-saving	Majumdar & Bose, 2018 Khut, 2016 Chen, Thomas & Kohli, 2016 Anderson, 2016
	Rational	Inclusion of logical, factual, concrete, evidence-based information; Inclusion of an effective description of the underlying monetary conditions and other business- or money-related language	
Mood of the character	Heroic	The main character/subject of the narrative is profiled as cheerful, hard-working or brave	Paulus & Robert, 2018
	Needy	The main character/subject of the narrative is profiled as being in need, weak or helpless	
Place of fund request	Beginning	The actual request for monetary funding is placed at the beginning of the narrative	Paulus & Roberts, 2018
	Middle	The actual request for monetary funding is placed in the middle part of the narrative	
	End	The actual request for monetary funding is placed at the end of the narrative	
Gender of the author	Female	It is communicated that the narrative is written by a female	Gorbotai & Nelson, 2015
	Non-female	It is not communicated that the narrative is written by a female	
Persuasion route	Central route	The author of the narrative attempts to persuade potential backers via the central route e.g. by providing product-specific and issue-relevant information about the project's product quality and usefulness;	Allison et al., 2017 Bi, Liu & Usman, 2017
	Peripheral route	The author of the narrative attempts to persuade potential backers via the peripheral route e.g. by portraying values not directly related to the project's product	
	...the author	The author of the narrative is communicated to be (one of) the project founders	Paulus & Roberts, 2018

Narrative written on behalf of...	...someone else	The author of the narrative is communicated to be writing on behalf of someone else (<i>third person approach</i>)	
Goal communication	Yes	The desired amount of funds to be assembled (goal) is communicated in the narrative	Paulus & Roberts, 2018 Frydrych et al., 2016
	No	The desired amount of funds to be assembled (goal) is not communicated in the narrative	
E-word of mouth	Yes	Narratives include words of backers (<i>e-word of mouth</i>) aiming to convince potential backers to make a fund	Bi, Liu & Usman, 2017 Perhankangas & Renko, 2016
	No	Narratives do not include words of backers aiming to convince potential backers to make a fund	

Appendix E: Climate change narratives framing attributes

Framing attribute	Operationalized variables (options)	Description	Source(s)
Impact frame	Humans	The author of a narrative names humanity as a victim of climate change	Dickinson et al, 2013
	Nature	The author of a narrative names nature or the environment (e.g. animals, forests or oceans) as a victim of climate change	Dickinson, 2009 Pyszczyński et al, 1999
	None	The narrative does not label a main victim of climate change	Myers et al., 2012 Maiback et al., 2010 Kogut & Ritov, 2005 Hart, 2011 Environmental Decisions, 2009 Majumdar & Bose, 2018 Gorbotai & Nelson, 2015 Chen, Thomas & Kohli, 2016
Attribution frame	Human activity	The author of the narrative describes human activity as main cause of climate change; The author of the narrative holds humanity responsible for climate change.	Bord et al., 2000 Maika et al., 2009 Otieno et al., 2014
	Natural process	The author of the narrative describes climate change as a natural process; The author of the narrative frames climate change as inevitable because it is a natural process.	Jang, 2013 Dickinson et al., 2013 Reser et al., 2012
Valence frame	Positive	Inclusion of negative emotions; Inclusion of fear inducing language; Emphasizing consequences instead of opportunities; Communication of threats and problems;	Amatulli et al., 2017 Chang, Zhang & Xie, 2015 Olsen et al., 2014 Levin, Schneider & Gaeth, 1998 Morton et al., 2011

	Negative	Inclusion of positive emotions; Inclusion of gain inducing language; Emphasizing on opportunities instead of consequences; Communication of hope and feasibility	Feinberg & Willer, 2011 O'Neil & Nicholson-Cole, 2009 Gifford & Comeau, 2011 Spence & Pidgeon, 2010 Ereaut & Segnit, 2006 Liverman, 2009 Daniels & Endfield, 2009 Futerra, 2005
Spatial frame	Local	The narrative describes climate change as a local problem; The narrative focusses on a local area and emphasizes on dangers or opportunities for that specific area	Scannel & Gifford, 2013 Leiserowitz, 2007
	Regional	The narrative describes climate change as a regional problem; The narrative focusses on a region/country/continent area and emphasizes on dangers or opportunities for that specific region/country/continent	Swim et al., 2009 Spence & Pidgeon, 2010 Devine-Wright & Howes, 2010
	Global	The narrative describes climate change as a global problem; The narrative focusses on the entire globe and emphasizes specific dangers or opportunities for the globe	Chang, Zhang & Xie, 2015
Temporal frame	Far future	The narrative describes climate change as an issue for the far future; The narrative addresses far-future problems (e.g. lives of our grandchildren) as main consequence of climate change	Busch, 2016 Van der Linden et al, 2015 Dickinson et al., 2013
	Near future	The narrative describes climate change as an issue for the near future; The narrative addresses near-future problems (e.g. sea level rise in the coming 20 years) as main consequence of climate change (coming +/- 20 years)	Rabinovich, Morton & Postmes, 2010 Spence, Poortinga & Pidgeon, 2012
	Now	The narrative describes climate change as an actual issue; The narrative addresses climate change-related problems as happening <i>as we speak</i> (e.g. extreme weather conditions; extinct animal species; forced migrations)	Leiserowitz, 2005

Appendix F: Climate change framing attributes presence and absence

	Narrative characteristics					Attribution frame				Impact frame				Spatial frame				Temporal frame				Valence frame				Total Climate Change attributes	
#	Platform	Crowdfunding model	Country	No.	Direct counter-global warming?	Human activity	Natural process	Mix	None	Humans	Nature	Mix	None	Global	Local	Regional	None	Far future	Near future	Now	None	Negative	Positive	Mix	None		
1	AB	LBC	UK	1	No	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	5
2	AB	LBC	UK	2	No	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	5
3	AB	LBC	UK	3	No	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	5
4	AB	LBC	UK	4	Yes	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	1	1	0	0	0	5
5	AB	LBC	UK	5	No	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	5
6	AB	LBC	UK	6	Yes	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	0	1	0	1	0	0	5
7	AB	LBC	UK	7	Yes	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	5
8	AB	LBC	UK	8	No	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0	5
9	BI	RBC	NO	1	No	1	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	6
10	CH	DBC	NL	1	No	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	5
11	CH	DBC	UK	1	Yes	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	1	1	0	7
12	CH	DBC	UK	2	No	1	0	0	0	1	1	1	0	0	0	0	1	1	0	0	0	1	0	0	0	0	8
13	CH	DBC	USA	1	Yes	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	5
14	CH	DBC	USA	2	Yes	0	0	0	1	1	0	0	0	0	1	0	0	1	0	0	0	1	1	1	1	0	8

15	CH	DBC	USA	3	Yes	0	0	0	1	0	0	0	1	1	0	0	0	0	0	1	0	0	0	1	6
16	CH	DBC	USA	4	Yes	0	0	0	1	1	0	0	0	1	0	0	0	0	0	1	1	1	1	0	8
17	CH	RBC	UK	1	No	1	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	1	0	0	6
18	CRC	EBC	UK	1	No	0	0	0	1	0	0	0	1	1	0	0	0	0	0	1	0	1	0	0	6
19	CRC	EBC	UK	2	No	0	0	0	1	0	0	0	1	0	1	1	0	0	0	1	0	0	0	1	6
20	CRC	EBC	UK	3	No	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	1	5
21	CRC	EBC	UK	4	No	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	1	1	1	0	7
22	FI	EBC	NO	1	No	1	0	0	0	1	1	1	0	1	0	0	0	0	1	0	1	1	1	0	10
23	FI	EBC	NO	2	Yes	1	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	1	0	0	5
24	FI	EBC	NO	3	Yes	0	0	0	1	0	0	0	1	0	0	1	0	0	0	1	0	0	0	1	5
25	FI	EBC	NO	4	Yes	0	0	0	1	0	0	0	1	0	0	1	0	0	0	1	0	1	0	0	5
26	GC	LBC	NL	1	Yes	0	0	0	1	0	0	0	1	1	1	0	0	0	0	1	0	1	0	0	6
27	GC	LBC	NL	10	Yes	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	5
28	GC	LBC	NL	2	Yes	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	1	5
29	GC	LBC	NL	3	Yes	0	0	0	1	0	0	0	1	0	0	1	0	0	0	1	0	1	0	0	5
30	GC	LBC	NL	4	No	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	5
31	GC	LBC	NL	5	Yes	0	0	0	1	0	0	0	1	0	0	1	0	0	0	1	0	1	0	0	5
32	GC	LBC	NL	6	Yes	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	5
33	GC	LBC	NL	7	No	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	1	5
34	GC	LBC	NL	8	Yes	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	5
35	GFM	DBC	USA	1	No	0	0	0	1	1	1	1	0	0	1	0	0	0	0	1	0	1	0	0	7
36	IGG	RBC	USA	1	Yes	1	0	0	0	0	0	0	1	1	0	0	0	0	0	1	1	1	1	0	8
37	JG	DBC	UK	1	No	0	0	0	1	0	1	0	0	1	0	0	0	0	0	1	1	0	0	0	6
38	JG	DBC	UK	2	No	0	0	0	1	1	0	0	0	1	0	0	0	0	0	1	1	0	0	0	6

39	JG	DBC	UK	3	No	0	0	0	1	1	1	1	0	0	0	1	0	0	0	0	1	1	1	1	0	9
40	KS	RBC	NL	1	No	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	1	0	0	5
41	KS	RBC	NL	2	No	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	1	0	0	5
42	KS	RBC	NL	3	Yes	1	0	0	0	0	1	0	0	0	0	0	1	0	1	0	0	0	1	0	0	5
43	KS	RBC	NL	4	Yes	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	1	1	1	1	0	8
44	KS	RBC	NO	1	No	1	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	1	0	0	5
45	KS	RBC	NO	2	No	0	0	0	1	1	1	1	0	1	0	0	0	0	0	1	0	1	1	1	0	10
46	KS	RBC	NO	3	Yes	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	1	5
47	KS	RBC	UK	1	No	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	1	0	0	5
48	KS	RBC	UK	2	No	0	0	0	1	1	1	1	0	0	0	0	1	0	0	0	1	0	1	0	0	7
49	KS	RBC	UK	3	No	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	1	1	1	0	7
50	KS	RBC	UK	4	Yes	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	1	0	0	5
51	KS	RBC	UK	5	No	0	0	0	1	1	1	1	0	0	0	0	1	0	0	0	1	1	1	1	0	9
52	KS	RBC	UK	6	No	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	0	1	0	0	5
53	KS	RBC	UK	7	No	0	0	0	1	1	1	1	0	0	0	1	0	0	0	0	1	0	1	0	0	7
54	KS	RBC	USA	1	No	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	1	0	0	5
55	KS	RBC	USA	2	No	0	0	0	1	1	1	1	0	0	0	1	0	0	0	0	1	0	1	0	0	7
56	KS	RBC	USA	3	No	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	1	0	0	5
57	KS	RBC	USA	4	Yes	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	6
58	KS	RBC	USA	5	Yes	1	0	0	0	1	1	1	0	0	0	0	1	0	0	0	1	1	1	1	0	9
59	KS	RBC	USA	6	No	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	1	1	1	1	0	8
60	KS	RBC	USA	7	No	1	0	0	0	1	1	1	0	0	0	1	0	0	0	0	1	1	1	1	0	9
61	KS	RBC	USA	8	Yes	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0	6
62	KS	RBC	USA	9	Yes	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0	6

63	OPC	DBC	NL	1	Yes	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	1	1	1	0	7
64	OPC	DBC	NL	2	No	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	5
65	OPC	LBC	NL	1	Yes	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1	0	1	0	0	6
66	OPC	LBC	NL	2	No	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	1	0	0	5
67	OPC	RBC	NL	1	Yes	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	0	1	0	0	5
68	OPC	RBC	NL	2	No	0	0	0	1	1	1	1	0	0	1	0	0	0	0	0	1	1	0	0	0	7
69	SB	EBC	NL	1	No	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	1	0	0	5
70	SPL	RBC	NO	1	Yes	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	1	1	1	1	0	7
71	WF	EBC	USA	1	Yes	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	1	0	0	5
72	WF	EBC	USA	2	Yes	1	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	0	1	0	0	5
Count (X)						23	0	0	49	18	25	12	41	16	20	17	21	3	2	2	65	23	57	16	8	436

Appendix G: Crowdfunding framing attributes presence or absence

#	Narrative characteristics					Word of mouth		Gender		Goal comm.		Mood of the character			Narrative written on behalf of...			Persuasion route			Place of fund request				Sentiment				Total Crowdfunding attributes
	Platform	Crowdfunding model	Country	No.	Direct counter-global warming?	No	Yes	Female	Non female	No	Yes	Heroic	Needy	None	...someone else	...the author	...no one	Central	Peripheral	Mix	Beginning	End	Middle	None	Emotional	Rational	Mix	None	
1	AB	LBC	UK	1	No	1	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	0	0	8
2	AB	LBC	UK	2	No	1	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	0	0	8
3	AB	LBC	UK	3	No	1	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	0	0	8
4	AB	LBC	UK	4	Yes	1	0	0	1	1	0	0	0	1	0	0	1	1	1	1	0	0	0	1	0	1	0	0	10
5	AB	LBC	UK	5	No	1	0	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	1	0	0	1	0	0	8
6	AB	LBC	UK	6	Yes	1	0	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	0	0	8
7	AB	LBC	UK	7	Yes	1	0	0	1	0	1	0	0	1	0	0	1	0	1	0	0	0	0	1	0	1	0	0	8
8	AB	LBC	UK	8	No	1	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	0	0	8
9	BI	RBC	NO	1	No	1	0	0	1	1	0	0	0	1	0	1	0	0	1	0	1	0	0	0	1	0	0	0	8
10	CH	DBC	NL	1	No	1	0	0	1	1	0	0	0	1	0	1	0	1	0	0	0	0	0	1	0	1	0	0	8
11	CH	DBC	UK	1	Yes	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	0	1	0	1	0	0	0	8
12	CH	DBC	UK	2	No	1	0	0	1	1	0	0	1	0	0	1	0	1	0	0	0	0	0	1	1	0	0	0	8
13	CH	DBC	USA	1	Yes	1	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	0	0	8

14	CH	DBC	USA	2	Yes	1	0	0	1	1	0	0	0	1	0	1	0	0	1	0	0	0	1	0	0	0	1	8
15	CH	DBC	USA	3	Yes	1	0	0	1	0	1	0	1	0	0	1	0	1	0	0	0	1	0	0	0	1	0	8
16	CH	DBC	USA	4	Yes	1	0	0	1	1	0	0	1	0	0	0	1	1	0	0	0	0	0	1	1	1	1	10
17	CH	RBC	UK	1	No	1	0	1	0	1	0	0	0	1	0	1	0	1	1	1	0	1	0	0	1	0	0	10
18	CRC	EBC	UK	1	No	1	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	0	8
19	CRC	EBC	UK	2	No	1	0	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	0	8
20	CRC	EBC	UK	3	No	1	0	0	1	0	1	0	0	1	0	0	1	1	1	1	0	0	0	1	0	1	0	10
21	CRC	EBC	UK	4	No	1	0	0	1	0	1	0	1	0	0	0	1	1	1	1	0	0	0	1	0	1	0	10
22	FI	EBC	NO	1	No	1	0	0	1	1	0	0	0	1	0	1	0	1	0	0	0	0	0	1	0	1	0	8
23	FI	EBC	NO	2	Yes	1	0	0	1	1	0	0	0	1	0	1	0	1	1	1	0	0	0	1	0	1	0	10
24	FI	EBC	NO	3	Yes	1	0	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	0	8
25	FI	EBC	NO	4	Yes	1	0	0	1	1	0	0	0	1	0	0	1	1	1	1	1	0	0	0	0	1	0	10
26	GC	LBC	NL	1	Yes	1	0	0	1	1	0	0	0	1	0	0	1	0	1	0	0	0	0	1	0	1	0	8
27	GC	LBC	NL	10	Yes	1	0	0	1	1	0	0	0	1	0	0	1	0	1	0	0	0	0	1	0	1	0	8
28	GC	LBC	NL	2	Yes	1	0	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	0	8
29	GC	LBC	NL	3	Yes	1	0	0	1	0	1	0	0	1	0	0	1	0	1	0	0	0	0	1	0	1	0	8
30	GC	LBC	NL	4	No	1	0	0	1	0	1	0	0	1	0	0	1	1	1	1	0	0	0	1	0	1	0	10
31	GC	LBC	NL	5	Yes	1	0	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	0	8
32	GC	LBC	NL	6	Yes	1	0	0	1	0	1	0	0	1	0	0	1	0	1	0	0	0	0	1	0	1	0	8
33	GC	LBC	NL	7	No	1	0	0	1	0	1	0	0	1	0	0	1	0	1	0	0	0	0	1	0	1	0	8
34	GC	LBC	NL	8	Yes	1	0	0	1	0	1	0	0	1	0	0	1	0	1	0	0	0	0	1	1	1	1	10
35	GFM	DBC	USA	1	No	1	0	0	1	1	0	0	1	0	0	1	0	1	0	0	0	0	0	1	1	1	1	10
36	IGG	RBC	USA	1	Yes	1	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	0	8

37	JG	DBC	UK	1	No	1	0	0	1	1	0	0	1	0	0	0	1	0	1	0	0	1	0	0	1	0	0	0	8
38	JG	DBC	UK	2	No	1	0	0	1	1	0	0	1	0	0	0	1	0	1	0	1	0	0	0	1	0	0	0	8
39	JG	DBC	UK	3	No	1	0	0	1	1	0	0	1	0	0	0	1	1	1	1	0	0	0	1	1	1	1	0	12
40	KS	RBC	NL	1	No	1	0	0	1	1	0	0	0	1	0	1	0	1	0	0	0	0	1	0	0	1	0	0	8
41	KS	RBC	NL	2	No	1	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	0	0	8
42	KS	RBC	NL	3	Yes	1	0	0	1	1	0	0	0	1	0	1	0	1	1	1	0	0	0	1	0	1	0	0	10
43	KS	RBC	NL	4	Yes	1	0	0	1	1	0	0	1	0	0	1	0	1	1	1	0	0	1	0	1	0	0	0	10
44	KS	RBC	NO	1	No	1	0	0	1	1	0	0	0	1	0	1	0	0	1	0	0	0	0	1	1	0	0	0	8
45	KS	RBC	NO	2	No	1	0	0	1	1	0	0	0	1	0	1	0	1	1	1	1	0	0	0	1	0	0	0	10
46	KS	RBC	NO	3	Yes	1	0	0	1	1	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	0	0	8
47	KS	RBC	UK	1	No	1	0	0	1	1	0	0	0	1	0	1	0	1	0	0	0	0	0	1	0	1	0	0	8
48	KS	RBC	UK	2	No	1	0	0	1	1	0	0	0	1	0	1	0	1	0	0	0	1	0	0	1	0	0	0	8
49	KS	RBC	UK	3	No	1	0	0	1	1	0	0	0	1	0	1	0	1	1	1	0	1	0	0	0	1	0	0	10
50	KS	RBC	UK	4	Yes	1	0	0	1	1	0	0	1	0	0	1	0	0	1	0	0	0	1	0	1	0	0	0	8
51	KS	RBC	UK	5	No	1	0	0	1	0	1	0	0	1	0	1	0	1	0	0	0	0	0	1	0	1	0	0	8
52	KS	RBC	UK	6	No	1	0	0	1	1	0	0	0	1	0	1	0	1	1	1	0	0	0	1	1	0	0	0	10
53	KS	RBC	UK	7	No	1	0	0	1	1	0	0	0	1	0	1	0	1	1	1	0	0	1	0	1	1	1	0	12
54	KS	RBC	USA	1	No	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	0	0	1	0	1	0	0	8
55	KS	RBC	USA	2	No	1	0	0	1	1	0	0	0	1	0	1	0	1	1	1	0	0	0	1	1	1	1	0	12
56	KS	RBC	USA	3	No	1	0	0	1	1	0	0	0	1	0	1	0	0	1	0	0	0	0	1	0	1	0	0	8
57	KS	RBC	USA	4	Yes	1	0	0	1	1	0	0	0	1	0	1	0	1	0	0	0	0	0	1	0	1	0	0	8
58	KS	RBC	USA	5	Yes	1	0	0	1	1	0	0	1	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	8
59	KS	RBC	USA	6	No	1	0	0	1	1	0	0	0	1	0	0	1	1	1	1	0	0	0	1	1	1	1	0	12

60	KS	RBC	USA	7	No	1	0	0	1	1	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1	1	1	0	10
61	KS	RBC	USA	8	Yes	1	0	0	1	0	1	0	0	1	0	1	0	1	0	0	1	0	0	0	0	1	0	0	8
62	KS	RBC	USA	9	Yes	1	0	0	1	0	1	0	0	1	0	1	0	1	0	0	0	0	0	1	0	1	0	0	8
63	OPC	DBC	NL	1	Yes	0	1	0	1	1	0	0	0	1	0	1	0	1	0	0	0	0	0	1	0	1	0	0	8
64	OPC	DBC	NL	2	No	1	0	1	0	0	1	0	0	1	0	1	0	0	1	0	0	0	0	1	1	0	0	0	8
65	OPC	LBC	NL	1	Yes	1	0	0	1	0	1	0	0	1	0	1	0	1	0	0	0	0	0	1	0	1	0	0	8
66	OPC	LBC	NL	2	No	1	0	0	1	0	1	0	0	1	0	0	1	0	1	0	0	1	0	0	0	1	0	0	8
67	OPC	RBC	NL	1	Yes	1	0	0	1	1	0	0	1	0	0	1	0	1	1	1	0	1	0	0	0	1	0	0	10
68	OPC	RBC	NL	2	No	1	0	1	0	0	1	0	0	1	0	1	0	0	1	0	0	0	1	0	1	0	0	0	8
69	SB	EBC	NL	1	No	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	0	0	8
70	SPL	RBC	NO	1	Yes	1	0	0	1	1	0	0	1	0	0	0	1	0	1	0	0	0	0	1	1	0	0	0	8
71	WF	EBC	USA	1	Yes	0	1	0	1	1	0	0	0	1	0	1	0	0	1	0	0	1	0	0	1	1	1	0	10
72	WF	EBC	USA	2	Yes	0	1	0	1	1	0	0	0	1	0	1	0	1	0	0	0	0	0	1	0	1	0	0	8
Count (X)						68	4	3	69	47	25	0	14	58	0	37	35	50	39	17	5	9	8	50	24	56	9	1	628

Appendix H: Green technology crowdfunding framing attributes

Framing attributes	Operationalized variables (options)	Description
Sentiment	Emotional	Inclusion of emotional words emphasizing on the need for funds; Inclusion of backing for money; Inclusion of attempts to appeal to someone's conscience (e.g. to arouse a feel of guilt/responsibility), or to let one feel heroic, cool, or life-saving
	Rational	Inclusion of logical, factual, concrete, evidence-based information; Inclusion of an effective description of the underlying monetary conditions and other business- or money-related language
Mood of the character	Heroic	The main character/subject of the narrative is profiled as cheerful, hard-working or brave
	Needy	The main character/subject of the narrative is profiled as being in need, weak or helpless
Place of fund request	Beginning	The actual request for monetary funding is placed at the beginning of the narrative
	Middle	The actual request for monetary funding is placed in the middle part of the narrative
	End	The actual request for monetary funding is placed at the end of the narrative
Persuasion route	Central route	The author of the narrative attempts to persuade potential backers via the central route e.g. by providing product-specific and issue-relevant information about the project's product quality and usefulness;
	Peripheral route	The author of the narrative attempts to persuade potential backers via the peripheral route e.g. by portraying values not directly related to the project's product
Narrative written on behalf of...	... the author	The author of the narrative is communicated to be (one of) the project founders
	<i>Unknown</i>	The author of the narrative does not specify whether he or she is part of the project or not
Goal communication	Yes	The desired amount of funds to be assembled (goal) is communicated in the narrative
	No	The desired amount of funds to be assembled (goal) is not communicated in the narrative
Impact frame	Humans	The author of a narrative names humanity to benefit most when the green technology becomes operational
	Nature	The author of a narrative names nature or the environment (e.g. animals, forests or oceans) to benefit most when the green technology becomes operational
	None	The narrative does not label who will benefit most when the green technology becomes operational
Attribution frame	Human activity	The author of the narrative describes human activity as main cause of climate change; The author of the narrative holds humanity responsible for climate change.

Valence frame	Positive	Inclusion of negative emotions; Inclusion of fear inducing language; Emphasizing consequences instead of opportunities; Communication of threats and problems;
	Negative	Inclusion of positive emotions; Inclusion of gain inducing language; Emphasizing on opportunities instead of consequences; Communication of hope and feasibility
Spatial frame	Local	The narrative describes a local area to benefit most when the green technology becomes operational; The narrative focusses on a local area and emphasizes on potential benefits for that specific location
	Regional	The narrative describes a specific region to benefit most when the green technology becomes operational; The narrative focusses on a local area and emphasizes on potential benefits for that specific region/country/continent
	Global	The narrative describes the entire globe to benefit most when the green technology becomes operational; The narrative focusses on a local area and emphasizes on potential benefits for the globe
Making a fund presented as...	...taking an opportunity	The author frames making a fund as taking an opportunity for potential backers instead of framing a fund as a favor
	...a favor	The author frames making a fund as doing a favor to the cause
	..paying-off a debt	The author frames making a fund as paying off a debt instead of making an investment or doing a favor
Risk communication	Yes	The narrative contains a detailed overview of all the risks involved when committing a fund
	No	The narrative does not contain a detailed overview of all the risks involved when committing a fund
Self-evident style	Yes	The author does not question and/or explain who is to blame for climate change as it is perceived as self-evident and obvious
	No	The author does question and/or explain who is to blame for climate change as it is not perceived as self-evident or obvious
Step-by-step plan of action	Yes	The narrative contains an elaborately explained step-by-step plan of action which the campaign attempts to follow
	No	The narrative does not contain an elaborately explained step-by-step plan of action which the campaign attempts to follow

Appendix I: Contingency table per country

	Attribution frame				Impact frame				Spatial frame				Temporal frame				Valence frame				Total Climate Change Attributes
	Human activity	Natural process	Mix	None	Humans	Nature	Mix	None	Global	Local	Regional	None	Far future	Near future	Now	None	Negative	Positive	Mix	None	
X_{NL} $X_{\%NL} = \frac{X_{NL}}{N_{NL}}$	5 24%	0 0%	0 0%	16 76%	2 10%	4 19%	1 5%	16 76%	3 14%	10 48%	3 14%	6 29%	0 0%	1 5%	0 0%	20 95%	3 14%	18 86%	2 10%	2 10%	114
X_{NO} $X_{\%NO} = \frac{X_{NO}}{N_{NO}}$	5 56%	0 0%	0 0%	4 44%	3 33%	5 56%	2 22%	3 33%	2 22%	0 0%	6 67%	1 11%	1 11%	0 0%	2 22%	6 67%	4 44%	6 67%	3 33%	2 22%	58
X_{UK} $X_{\%UK} = \frac{X_{UK}}{N_{UK}}$	6 24%	0 0%	0 0%	19 76%	6 24%	9 36%	5 20%	15 60%	4 16%	7 28%	6 24%	9 36%	1 4%	1 4%	0 0%	23 92%	10 40%	17 68%	5 20%	3 12%	151
X_{USA} $X_{\%USA} = \frac{X_{USA}}{N_{USA}}$	7 41%	0 0%	0 0%	10 59%	7 41%	7 41%	4 24%	7 41%	7 41%	3 18%	2 12%	5 29%	1 6%	0 0%	0 0%	16 94%	6 35%	16 94%	6 35%	1 6%	113

	Word of mouth		Gender		Goal comm.		Mood of the character			Narrative written on behalf of...			Persuasion route			Place of fund request				Sentiment				Total Crowdfunding attributes
	No	Yes	Female	Non female	No	Yes	Heroic	Needy	None	... someone else	...the author	...no one	Central	Peripheral	Mix	Beginning	End	Middle	None	Emotional	Rational	Mix	None	
X_{NL} $X_{\%NL} = \frac{X_{NL}}{N_{NL}}$	19	2	2	19	9	12	0	2	19	0	9	12	12	13	4	0	2	3	16	4	18	1	0	178
	90%	10%	10%	90%	43%	57%	0%	10%	90%	0%	43%	57%	57%	62%	19%	0%	10%	14%	76%	19%	86%	5%	0%	
X_{NO} $X_{\%NO} = \frac{X_{NO}}{N_{NO}}$	9	0	0	9	8	1	0	1	8	0	5	4	6	6	3	3	0	0	6	4	5	0	0	78
	100%	0%	0%	100%	89%	11%	0%	11%	89%	0%	56%	44%	67%	67%	33%	33%	0%	0%	67%	44%	56%	0%	0%	
X_{UK} $X_{\%UK} = \frac{X_{UK}}{N_{UK}}$	25	0	1	24	17	8	0	6	19	0	10	15	20	13	8	1	4	4	16	10	17	2	0	220
	100%	0%	4%	96%	68%	32%	0%	24%	76%	0%	40%	60%	80%	52%	32%	4%	16%	16%	64%	40%	68%	8%	0%	
X_{USA} $X_{\%USA} = \frac{X_{USA}}{N_{USA}}$	15	2	0	17	13	4	0	5	12	0	13	4	12	7	2	1	3	1	12	6	16	6	1	152
	88%	12%	0%	100%	76%	24%	0%	29%	71%	0%	76%	24%	71%	41%	12%	6%	18%	6%	71%	35%	94%	35%	6%	

Appendix J: Cross-country χ^2 -test of independence results

	Attribution frame	Impact frame	Spatial frame	Temporal frame	Valence frame	Word of mouth	Gender	Goal communicated?	Mood of the character	Narrative written on behalf of...	Place of fund request	Persuasion route	Sentiment
The Netherlands versus Norway													
χ^2	2,857	5,272	10,298	8,022	5,113	0,918	0,918	5,436	0,018	0,408	9,221	0,733	3,438
df	1	3	2	3	3	1	1	1	1	1	3	2	2
P-value	0,091	0,153	0,006	0,046	0,164	0,338	0,338	0,020	0,894	0,523	0,026	0,639	0,179
Significant?	No	No	Yes	Yes	No	No	No	Yes	No	No	Yes	No	No
The Netherlands versus The United Kingdom													
χ^2	<0,001	2,513	4,160	0,868	4,409	2,489	0,571	2,936	1,665	0,038	1,473	2,951	2,401
df	1	3	3	2	3	1	1	1	1	1	3	2	2
P-value	0,988	0,437	0,245	0,648	0,221	0,115	0,450	0,087	0,197	0,845	0,689	0,229	0,301
Significant?	No	No	No	No	No	No	No	No	No	No	No	No	No
The Netherlands versus The United States of America													
χ^2	1,311	5,967	3,549	2,046	4,345	0,050	1,709	4,354	2,473	4,354	2,377	1,629	9,066
df	1	3	2	2	3	1	1	1	1	1	3	2	3
P-value	0,252	0,113	0,170	0,360	0,227	0,823	0,191	0,037	0,116	0,037	0,498	0,443	0,028
Significant?	No	No	No	No	No	No	No	Yes	No	Yes	No	No	Yes
Norway versus The United Kingdom													
χ^2	3,011	2,439	6,994	6,892	1,589	-	0,371	1,484	0,672	0,650	7,727	0,826	1,033
df	1	3	3	3	3	-	1	1	1	1	3	2	2
P-value	0,083	0,486	0,072	0,072	0,662	-	0,543	0,223	0,412	0,420	0,052	0,662	0,597
Significant?	No	No	No	No	No	-	No	No	No	No	No	No	No
Norway versus The United States of America													
χ^2	0,490	0,889	8,572	4,511	4,022	1,147	-	0,584	1,110	1,208	5,013	2,218	11,272
df	1	3	2	2	3	1	-	1	1	1	3	2	3
P-value	0,484	0,828	0,014	0,105	0,259	0,284	-	0,445	0,292	0,272	0,171	0,330	0,010
Significant?	No	No	Yes	No	No	No	-	No	No	No	No	No	Yes
The United Kingdom versus The United States of America													
χ^2	1,397	2,739	5,286	0,760	4,928	3,088	0,697	0,356	0,153	5,433	1,028	2,343	10,871
df	1	3	3	2	3	1	1	1	1	1	3	2	3
P-value	0,237	4,34	0,152	0,684	0,177	0,079	0,404	0,551	0,695	0,020	0,795	0,310	0,012
Significant?	No	No	No	No	No	No	No	No	No	Yes	No	No	Yes

Appendix K: Cross-country percentual differences per framing attribute

	Attribution frame				Impact frame				Spatial frame				Temporal frame				Valence frame			
	Human activity	Natural process	Mix	None	Humans	Nature	Mix	None	Global	Local	Regional	None	Far future	Near future	Now	None	Negative	Positive	Mix	None
$ \Delta _{NL-NO} = X_{\%NL} - X_{\%NO} $	32%	0%	0%	32%	24%	37%	17%	43%	8%	48%	52%	17%	11%	5%	22%	29%	30%	19%	24%	13%
$ \Delta _{NL-UK} = X_{\%NL} - X_{\%UK} $	0%	0%	0%	0%	14%	17%	15%	16%	2%	20%	10%	7%	4%	1%	0%	3%	26%	18%	10%	2%
$ \Delta _{NL-USA} = X_{\%NL} - X_{\%USA} $	17%	0%	0%	17%	32%	22%	19%	35%	27%	30%	3%	1%	6%	5%	0%	1%	21%	8%	26%	4%
$ \Delta _{NO-UK} = X_{\%NO} - X_{\%UK} $	32%	0%	0%	32%	9%	20%	2%	27%	6%	28%	43%	25%	7%	4%	22%	25%	4%	1%	13%	10%
$ \Delta _{NO-USA} = X_{\%NO} - X_{\%USA} $	14%	0%	0%	14%	-8%	14%	1%	8%	19%	18%	55%	18%	5%	0%	22%	27%	9%	27%	2%	16%
$ \Delta _{UK-USA} = X_{\%UK} - X_{\%USA} $	17%	0%	0%	17%	-17%	-5%	4%	19%	25%	10%	12%	7%	2%	4%	0%	2%	5%	26%	15%	6%

	Word of mouth		Gender		Goal comm.		Mood of the character			Narrative written on behalf of...			Persuasion route			Place of fund request				Sentiment			
	No	Yes	Female	Non female	No	Yes	Heroic	Needy	None	...someone else	...the author	...no one	Central	Peripheral	Mix	Beginning	End	Middle	None	Emotional	Rational	Mix	None
$ \Delta _{NL-NO} = X_{\%NL} - X_{\%NO} $	10%	10%	10%	10%	46%	46%	0%	2%	2%	0%	13%	13%	10%	5%	14%	33%	10%	14%	10%	25%	30%	5%	0%
$ \Delta _{NL-UK} = X_{\%NL} - X_{\%UK} $	10%	10%	6%	6%	25%	25%	0%	14%	14%	0%	3%	3%	23%	10%	13%	4%	6%	2%	12%	21%	18%	3%	0%
$ \Delta _{NL-USA} = X_{\%NL} - X_{\%USA} $	2%	2%	10%	10%	34%	34%	0%	20%	20%	0%	34%	34%	13%	21%	7%	6%	8%	8%	6%	16%	8%	31%	6%
$ \Delta _{NO-UK} = X_{\%NO} - X_{\%UK} $	0%	0%	4%	4%	21%	21%	0%	13%	13%	0%	16%	16%	13%	15%	1%	29%	16%	16%	3%	4%	12%	8%	0%
$ \Delta _{NO-USA} = X_{\%NO} - X_{\%USA} $	12%	12%	0%	0%	12%	12%	0%	18%	18%	0%	21%	21%	4%	25%	22%	27%	18%	6%	4%	9%	39%	35%	6%
$ \Delta _{UK-USA} = X_{\%UK} - X_{\%USA} $	12%	12%	4%	4%	8%	8%	0%	5%	5%	0%	36%	36%	9%	11%	20%	2%	2%	10%	7%	5%	26%	27%	6%

	Attribution frame				Impact frame				Spatial frame				Temporal frame				Valence frame			
	Human activity	Natural process	Mix	None	Humans	Nature	Mix	None	Global	Local	Regional	None	Far future	Near future	Now	None	Negative	Positive	Mix	None
$X_{\%NL} - X_{\%NO}$	-32%	0%	0%	32%	-24%	-37%	-17%	43%	-8%	48%	-52%	17%	-11%	5%	-22%	29%	-30%	19%	-24%	-13%
$X_{\%NL} - X_{\%UK}$	0%	0%	0%	0%	-14%	-17%	-15%	16%	-2%	20%	-10%	-7%	-4%	1%	0%	3%	-26%	18%	-10%	-2%
$X_{\%NL} - X_{\%USA}$	-17%	0%	0%	17%	-32%	-22%	-19%	35%	-27%	30%	3%	-1%	-6%	5%	0%	1%	-21%	-8%	-26%	4%
$X_{\%NO} - X_{\%NL}$	32%	0%	0%	-32%	24%	37%	17%	-43%	8%	-48%	52%	-17%	11%	-5%	22%	-29%	30%	-19%	24%	13%
$X_{\%NO} - X_{\%UK}$	32%	0%	0%	-32%	9%	20%	2%	-27%	6%	-28%	43%	-25%	7%	-4%	22%	-25%	4%	-1%	13%	10%
$X_{\%NO} - X_{\%USA}$	14%	0%	0%	-14%	-8%	14%	-1%	-8%	-19%	-18%	55%	-18%	5%	0%	22%	-27%	9%	-27%	-2%	16%
$X_{\%UK} - X_{\%NL}$	0%	0%	0%	0%	14%	17%	15%	-16%	2%	-20%	10%	7%	4%	-1%	0%	-3%	26%	-18%	10%	2%
$X_{\%UK} - X_{\%NO}$	-32%	0%	0%	32%	-9%	-20%	-2%	27%	-6%	28%	-43%	25%	-7%	4%	-22%	25%	-4%	1%	-13%	-10%
$X_{\%UK} - X_{\%USA}$	-17%	0%	0%	17%	-17%	-5%	-4%	19%	-25%	10%	12%	7%	-2%	4%	0%	-2%	5%	-26%	-15%	6%
$X_{\%USA} - X_{\%NL}$	17%	0%	0%	-17%	32%	22%	19%	-35%	27%	-30%	-3%	1%	6%	-5%	0%	-1%	21%	8%	26%	-4%
$X_{\%USA} - X_{\%NO}$	-14%	0%	0%	14%	8%	-14%	1%	8%	19%	18%	-55%	18%	-5%	0%	-22%	27%	-9%	27%	2%	-16%
$X_{\%USA} - X_{\%UK}$	17%	0%	0%	-17%	17%	5%	4%	-19%	25%	-10%	-12%	-7%	2%	-4%	0%	2%	-5%	26%	15%	-6%

	Word of mouth		Gender		Goal comm.		Mood of the character			Narrative written on behalf of...			Persuasion route			Place of fund request				Sentiment			
	No	Yes	Female	Non female	No	Yes	Heroic	Needy	None	...someone else	...the author	...no one	Central	Peripheral	Mix	Beginning	End	Middle	None	Emotional	Rational	Mix	None
$X_{\%NL} - X_{\%NO}$	-10%	10%	10%	-10%	-46%	46%	0%	-2%	2%	0%	-13%	13%	-10%	-5%	-14%	-33%	10%	14%	10%	-25%	30%	5%	0%
$X_{\%NL} - X_{\%UK}$	-10%	10%	6%	-6%	-25%	25%	0%	-14%	14%	0%	3%	-3%	-23%	10%	-13%	-4%	-6%	-2%	12%	-21%	18%	-3%	0%
$X_{\%NL} - X_{\%USA}$	2%	-2%	10%	-10%	-34%	34%	0%	-20%	20%	0%	-34%	34%	-13%	21%	7%	-6%	-8%	8%	6%	-16%	-8%	-31%	-6%
$X_{\%NO} - X_{\%NL}$	10%	-10%	-10%	10%	46%	-46%	0%	2%	-2%	0%	13%	-13%	10%	5%	14%	33%	-10%	-14%	-10%	25%	-30%	-5%	0%
$X_{\%NO} - X_{\%UK}$	0%	0%	-4%	4%	21%	-21%	0%	-13%	13%	0%	16%	-16%	-13%	15%	1%	29%	-16%	-16%	3%	4%	-12%	-8%	0%
$X_{\%NO} - X_{\%USA}$	12%	-12%	0%	0%	12%	-12%	0%	-18%	18%	0%	-21%	21%	-4%	25%	22%	27%	-18%	-6%	-4%	9%	-39%	-35%	-6%
$X_{\%UK} - X_{\%NL}$	10%	-10%	-6%	6%	25%	-25%	0%	14%	-14%	0%	-3%	3%	23%	-10%	13%	4%	6%	2%	-12%	21%	-18%	3%	0%
$X_{\%UK} - X_{\%NO}$	0%	0%	4%	-4%	-21%	21%	0%	13%	-13%	0%	-16%	16%	13%	-15%	-1%	-29%	16%	16%	-3%	-4%	12%	8%	0%
$X_{\%UK} - X_{\%USA}$	12%	-12%	4%	-4%	-8%	8%	0%	-5%	5%	0%	-36%	36%	9%	11%	20%	-2%	-2%	10%	-7%	5%	-26%	-27%	-6%
$X_{\%USA} - X_{\%NL}$	-2%	2%	-10%	10%	34%	-34%	0%	20%	-20%	0%	34%	-34%	13%	-21%	-7%	6%	8%	-8%	-6%	16%	8%	31%	6%
$X_{\%USA} - X_{\%NO}$	-12%	12%	0%	0%	-12%	12%	0%	18%	-18%	0%	21%	-21%	4%	-25%	-22%	-27%	18%	6%	4%	-9%	39%	35%	6%
$X_{\%USA} - X_{\%UK}$	-12%	12%	-4%	4%	8%	-8%	0%	5%	-5%	0%	36%	-36%	-9%	-11%	-20%	2%	2%	-10%	7%	-5%	26%	27%	6%

Appendix L: Contingency table per crowdfunding model

	Attribution frame				Impact frame				Spatial frame				Temporal frame				Valence frame				Total Climate Change Attributes
	Human activity	Natural process	Mix	None	Humans	Nature	Mix	None	Global	Local	Regional	None	Far future	Near future	Now	None	Negative	Positive	Mix	None	
X_{DBC}	4	0	0	9	6	4	3	6	4	6	2	1	2	0	0	11	8	9	5	1	87
$X_{\%DBC} = \frac{X_{DBC}}{N_{DBC}}$	31%	0%	0%	69%	46%	31%	23%	46%	31%	46%	15%	8%	15%	0%	0%	85%	62%	69%	38%	8%	
X_{EBC}	3	0	0	8	1	2	1	9	2	2	4	4	0	0	1	10	2	8	2	3	64
$X_{\%EBC} = \frac{X_{EBC}}{N_{EBC}}$	27%	0%	0%	73%	9%	18%	9%	82%	18%	18%	36%	36%	0%	0%	9%	91%	18%	73%	18%	27%	
X_{UK}	3	0	0	16	1	0	0	18	2	11	5	2	0	0	0	19	1	15	0	3	97
$X_{\%LBC} = \frac{X_{LBC}}{N_{LBC}}$	16%	0%	0%	84%	5%	0%	0%	95%	11%	58%	26%	11%	0%	0%	0%	100%	5%	79%	0%	16%	
X_{RBC}	13	0	0	16	10	19	8	8	8	1	6	14	1	2	1	25	12	25	9	1	188
$X_{\%RBC} = \frac{X_{RBC}}{N_{RBC}}$	45%	0%	0%	55%	34%	66%	28%	28%	28%	3%	21%	48%	3%	7%	3%	86%	41%	86%	31%	3%	

	Word of mouth		Gender		Goal comm.		Mood of the character			Narrative written on behalf of...			Persuasion route			Place of fund request				Sentiment				Total Crowdfunding attributes
	No	Yes	Female	Non female	No	Yes	Heroic	Needy	None	... someone else	...the author	...no one	Central	Peripheral	Mix	Beginning	End	Middle	None	Emotional	Rational	Mix	None	
X_{DBC} $X_{\%DBC} = \frac{X_{DBC}}{N_{DBC}}$	12	1	1	12	10	3	0	7	6	0	8	5	8	6	1	1	2	2	8	8	7	3	1	112
	92%	8%	8%	92%	77%	23%	0%	54%	46%	0%	62%	38%	62%	46%	8%	8%	15%	15%	62%	62%	54%	23%	8%	
X_{EBC} $X_{\%EBC} = \frac{X_{EBC}}{N_{EBC}}$	8	3	0	11	6	5	0	1	10	0	4	7	10	5	4	1	1	0	9	1	11	1	0	98
	73%	27%	0%	100%	55%	45%	0%	9%	91%	0%	36%	64%	91%	45%	36%	9%	9%	0%	82%	9%	100%	9%	0%	
X_{LBC} $X_{\%LBC} = \frac{X_{LBC}}{N_{LBC}}$	19	0	0	19	7	12	0	0	19	0	1	18	11	10	2	0	1	1	17	1	19	1	0	158
	100%	0%	0%	100%	37%	63%	0%	0%	100%	0%	5%	95%	58%	53%	11%	0%	5%	5%	89%	5%	100%	5%	0%	
X_{RBC} $X_{\%RBC} = \frac{X_{RBC}}{N_{RBC}}$	29	0	2	27	24	5	0	6	23	0	24	5	21	18	10	3	5	5	16	14	19	4	0	260
	100%	0%	7%	93%	83%	17%	0%	21%	79%	0%	83%	17%	72%	62%	34%	10%	17%	17%	55%	48%	66%	14%	0%	

Appendix M: Cross-model χ^2 -test of independence results

	Attribution frame	Impact frame	Spatial frame	Temporal frame	Valence frame	Word of mouth	Gender	Goal communicated?	Mood of the character	Narrative written on behalf of...	Place of fund request	Persuasion route	Sentiment
DBC versus EBC													
χ^2	0,035	4,464	1,510	2,901	5,558	1,645	0,883	1,343	5,371	1,510	2,241	4,408	9,471
df	1	3	2	2	3	1	1	1	1	1	3	2	3
P-value	0,851	0,215	0,470	0,234	0,135	0,200	0,347	0,247	0,020	0,219	0,524	0,110	0,024
Significant?	No	No	No	No	No	No	No	No	Yes	No	No	No	Yes
DBC versus LBC													
χ^2	1,013	10,235	4,226	3,118	12,690	1,509	1,509	4,979	13,095	12,092	3,919	0,156	15,323
df	1	3	3	1	3	1	1	1	1	1	1	2	3
P-value	0,314	0,017	0,238	0,077	0,005	0,219	0,219	0,026	<0,001	0,001	0,270	0,925	0,002
Significant?	No	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	No	No	Yes
DBC versus RBC													
χ^2	0,736	5,845	0,172	3,138	2,629	2,285	0,009	0,198	4,617	2,228	0,167	3,333	3,606
df	1	3	2	3	3	1	1	1	1	1	3	2	3
P-value	0,391	0,119	0,918	0,371	0,452	0,131	0,926	0,656	0,032	0,136	0,983	0,189	0,307
Significant?	No	No	No	No	No	No	No	No	Yes	No	No	No	No
EBC versus LBC													
χ^2	0,574	4,163	2,283	1,787	5,085	5,758	-	0,889	1,787	4,852	2,506	4,928	0,164
df	1	3	3	1	3	1	-	1	1	1	3	2	1
P-value	0,449	0,244	0,516	0,181	0,166	0,016	-	0,346	0,181	0,028	0,474	0,085	0,685
Significant?	No	No	No	No	No	Yes	-	No	No	Yes	No	Yes	No
EBC versus RBC													
χ^2	1,024	9,701	1,129	1,666	6,144	8,550	0,799	3,386	0,743	8,174	3,168	1,739	5,893
df	1	3	2	3	3	1	1	1	1	1	3	2	2
P-value	0,312	0,021	0,569	0,645	0,105	0,003	0,372	0,066	0,389	0,004	0,366	0,419	0,053
Significant?	No	Yes	No	No	No	Yes	No	No	No	Yes	No	No	No
LBC versus RBC													
χ^2	4,356	22,053	6,385	2,859	9,355	-	1,367	10,581	4,493	27,623	6,565	3,607	10,443
df	1	3	3	3	3	-	1	1	1	1	3	2	2
P-value	0,037	<0,001	0,094	0,414	0,025	-	0,242	0,001	0,034	<0,001	0,087	0,165	0,005
Significant?	Yes	Yes	No	No	Yes	-	No	Yes	Yes	Yes	No	No	Yes

Appendix N: Cross-crowdfunding percentual differences per framing attribute

	Attribution frame				Impact frame				Spatial frame				Temporal frame				Valence frame			
	Human activity	Natural process	Mix	None	Humans	Nature	Mix	None	Global	Local	Regional	None	Far future	Near future	Now	None	Negative	Positive	Mix	None
$ \Delta _{DBC-EBC} = X_{\%DBC} - X_{\%EBC} $	3%	0%	0%	3%	37%	13%	14%	36%	13%	28%	21%	29%	15%	0%	9%	6%	43%	3%	20%	20%
$ \Delta _{DBC-LBC} = X_{\%DBC} - X_{\%LBC} $	15%	0%	0%	15%	41%	31%	23%	49%	20%	12%	11%	3%	15%	0%	0%	15%	56%	10%	38%	8%
$ \Delta _{DBC-RBC} = X_{\%DBC} - X_{\%RBC} $	14%	0%	0%	14%	12%	35%	5%	19%	3%	43%	5%	41%	12%	7%	3%	2%	20%	17%	7%	4%
$ \Delta _{EBC-LBC} = X_{\%EBC} - X_{\%LBC} $	11%	0%	0%	11%	4%	18%	9%	13%	8%	40%	10%	26%	0%	0%	9%	9%	13%	6%	18%	11%
$ \Delta _{EBC-RBC} = X_{\%EBC} - X_{\%RBC} $	18%	0%	0%	18%	25%	47%	18%	54%	9%	15%	16%	12%	3%	7%	6%	5%	23%	13%	13%	24%
$ \Delta _{LBC-RBC} = X_{\%LBC} - X_{\%RBC} $	29%	0%	0%	29%	29%	66%	28%	67%	17%	54%	6%	38%	3%	7%	3%	14%	36%	7%	31%	12%

	Word of mouth		Gender		Goal comm.		Mood of the character			Narrative written on behalf of...			Persuasion route			Place of fund request				Sentiment			
	No	Yes	Female	Non female	No	Yes	Heroic	Needy	None	...someone else	...the author	...no one	Central	Peripheral	Mix	Beginning	End	Middle	None	Emotional	Rational	Mix	None
$ \Delta _{DBC-EBC} = X_{\%DBC} - X_{\%EBC} $	20%	20%	8%	8%	22%	22%	0%	45%	45%	0%	25%	25%	29%	1%	29%	1%	6%	15%	20%	52%	46%	14%	8%
$ \Delta _{DBC-LBC} = X_{\%DBC} - X_{\%LBC} $	8%	8%	8%	8%	40%	40%	0%	54%	54%	0%	56%	56%	4%	6%	3%	8%	10%	10%	28%	56%	46%	18%	8%
$ \Delta _{DBC-RBC} = X_{\%DBC} - X_{\%RBC} $	8%	8%	1%	1%	6%	6%	0%	33%	33%	0%	21%	21%	11%	16%	27%	3%	2%	2%	6%	13%	12%	9%	8%
$ \Delta _{EBC-LBC} = X_{\%EBC} - X_{\%LBC} $	27%	27%	0%	0%	18%	18%	0%	9%	9%	0%	31%	31%	33%	7%	26%	9%	4%	5%	8%	4%	0%	4%	0%
$ \Delta _{EBC-RBC} = X_{\%EBC} - X_{\%RBC} $	27%	27%	7%	7%	28%	28%	0%	12%	12%	0%	46%	46%	18%	17%	2%	1%	8%	17%	27%	39%	34%	5%	0%
$ \Delta _{LBC-RBC} = X_{\%LBC} - X_{\%RBC} $	0%	0%	7%	7%	46%	46%	0%	21%	21%	0%	77%	77%	15%	9%	24%	10%	12%	12%	34%	43%	34%	9%	0%

		Attribution frame				Impact frame				Spatial frame				Temporal frame				Valence frame			
		Human activity	Natural process	Mix	None	Humans	Nature	Mix	None	Global	Local	Regional	None	Far future	Near future	Now	None	Negative	Positive	Mix	None
$X_{\%DBC} - X_{\%EBC}$		3%	0%	0%	-3%	37%	13%	14%	-36%	13%	28%	-21%	-29%	15%	0%	-9%	-6%	43%	-3%	20%	-20%
	$X_{\%DBC} - X_{\%LBC}$	15%	0%	0%	-15%	41%	31%	23%	-49%	20%	-12%	-11%	-3%	15%	0%	0%	-15%	56%	-10%	38%	-8%
	$X_{\%DBC} - X_{\%RBC}$	-14%	0%	0%	14%	12%	-35%	-5%	19%	3%	43%	-5%	-41%	12%	-7%	-3%	-2%	20%	-17%	7%	4%
$X_{\%EBC} - X_{\%DBC}$		-3%	0%	0%	3%	-37%	-13%	-14%	36%	-13%	-28%	21%	29%	-15%	0%	9%	6%	-43%	3%	-20%	20%
	$X_{\%EBC} - X_{\%LBC}$	11%	0%	0%	-11%	4%	18%	9%	-13%	8%	-40%	10%	26%	0%	0%	9%	-9%	13%	-6%	18%	11%
	$X_{\%EBC} - X_{\%RBC}$	-18%	0%	0%	18%	-25%	-47%	-18%	54%	-9%	15%	16%	-12%	-3%	-7%	6%	5%	-23%	-13%	-13%	24%
$X_{\%LBC} - X_{\%DBC}$		-15%	0%	0%	15%	-41%	-31%	-23%	49%	-20%	12%	11%	3%	-15%	0%	0%	15%	-56%	10%	-38%	8%
	$X_{\%LBC} - X_{\%EBC}$	-11%	0%	0%	11%	-4%	-18%	-9%	13%	-8%	40%	-10%	-26%	0%	0%	-9%	9%	-13%	6%	-18%	-11%
	$X_{\%LBC} - X_{\%RBC}$	-29%	0%	0%	29%	-29%	-66%	-28%	67%	-17%	54%	6%	-38%	-3%	-7%	-3%	14%	-36%	-7%	-31%	12%
$X_{\%RBC} - X_{\%DBC}$		14%	0%	0%	-14%	-12%	35%	5%	-19%	-3%	-43%	5%	41%	-12%	7%	3%	2%	-20%	17%	-7%	-4%
	$X_{\%RBC} - X_{\%EBC}$	18%	0%	0%	-18%	25%	47%	18%	-54%	9%	-15%	-16%	12%	3%	7%	-6%	-5%	23%	13%	13%	-24%
	$X_{\%RBC} - X_{\%LBC}$	29%	0%	0%	-29%	29%	66%	28%	-67%	17%	-54%	-6%	38%	3%	7%	3%	-14%	36%	7%	31%	-12%

	Word of mouth		Gender		Goal comm.		Mood of the character			Narrative written on behalf of...			Persuasion route			Place of fund request				Sentiment			
	No	Yes	Female	Non female	No	Yes	Heroic	Needy	None	...someone else	...the author	...no one	Central	Peripheral	Mix	Beginning	End	Middle	None	Emotional	Rational	Mix	None
$X_{\%DBC} - X_{\%EBC}$	20%	-20%	8%	-8%	22%	-22%	0%	45%	-45%	0%	25%	-25%	-29%	1%	-29%	-1%	6%	15%	-20%	52%	-46%	14%	8%
$X_{\%DBC} - X_{\%LBC}$	-8%	8%	8%	-8%	40%	-40%	0%	54%	-54%	0%	56%	-56%	4%	-6%	-3%	8%	10%	10%	-28%	56%	-46%	18%	8%
$X_{\%DBC} - X_{\%RBC}$	-8%	8%	1%	-1%	-6%	6%	0%	33%	-33%	0%	-21%	21%	-11%	-16%	-27%	-3%	-2%	-2%	6%	13%	-12%	9%	8%
$X_{\%EBC} - X_{\%DBC}$	-20%	20%	-8%	8%	-22%	22%	0%	-45%	45%	0%	-25%	25%	29%	-1%	29%	1%	-6%	-15%	20%	-52%	46%	-14%	-8%
$X_{\%EBC} - X_{\%LBC}$	-27%	27%	0%	0%	18%	-18%	0%	9%	-9%	0%	31%	-31%	33%	-7%	26%	9%	4%	-5%	-8%	4%	0%	4%	0%
$X_{\%EBC} - X_{\%RBC}$	-27%	27%	-7%	7%	-28%	28%	0%	-12%	12%	0%	-46%	46%	18%	-17%	2%	-1%	-8%	-17%	27%	-39%	34%	-5%	0%
$X_{\%LBC} - X_{\%DBC}$	8%	-8%	-8%	8%	-40%	40%	0%	-54%	54%	0%	-56%	56%	-4%	6%	3%	-8%	-10%	-10%	28%	-56%	46%	-18%	-8%
$X_{\%LBC} - X_{\%EBC}$	27%	-27%	0%	0%	-18%	18%	0%	-9%	9%	0%	-31%	31%	-33%	7%	-26%	-9%	-4%	5%	8%	-4%	0%	-4%	0%
$X_{\%LBC} - X_{\%RBC}$	0%	0%	-7%	7%	-46%	46%	0%	-21%	21%	0%	-77%	77%	-15%	-9%	-24%	-10%	-12%	-12%	34%	-43%	34%	-9%	0%
$X_{\%RBC} - X_{\%DBC}$	8%	-8%	-1%	1%	6%	-6%	0%	-33%	33%	0%	21%	-21%	11%	16%	27%	3%	2%	2%	-6%	-13%	12%	-9%	-8%
$X_{\%RBC} - X_{\%EBC}$	27%	-27%	7%	-7%	28%	-28%	0%	12%	-12%	0%	46%	-46%	-18%	17%	-2%	1%	8%	17%	-27%	39%	-34%	5%	0%
$X_{\%RBC} - X_{\%LBC}$	0%	0%	7%	-7%	46%	-46%	0%	21%	-21%	0%	77%	-77%	15%	9%	24%	10%	12%	12%	-34%	43%	-34%	9%	0%

Appendix O: Contingency table per purpose

	Attribution frame				Impact frame				Spatial frame				Temporal frame				Valence frame				Total Climate Change Attributes
	Human activity	Natural process	Mix	None	Humans	Nature	Mix	None	Global	Local	Regional	None	Far future	Near future	Now	None	Negative	Positive	Mix	None	
X_{DIR}	11	0	0	22	6	7	1	21	9	9	9	7	1	1	0	31	9	28	8	4	193
$X_{%DIR} = \frac{X_{DIR}}{N_{DIR}}$	33%	0%	0%	67%	18%	21%	3%	64%	27%	27%	27%	21%	3%	3%	0%	94%	27%	85%	24%	12%	
X_{DIR}	12	0	0	27	12	18	11	20	7	11	8	14	2	1	2	34	14	29	8	4	243
$X_{%IND} = \frac{X_{IND}}{N_{IND}}$	31%	0%	0%	69%	31%	46%	28%	51%	18%	28%	21%	36%	5%	3%	5%	87%	36%	74%	21%	10%	

	Word of mouth		Gender		Goal comm.		Mood of the character			Narrative written on behalf of...			Persuasion route			Place of fund request				Sentiment				Total Crowdfunding attributes
	No	Yes	Female	Non female	No	Yes	Heroic	Needy	None	...someone else	...the author	...no one	Central	Peripheral	Mix	Beginning	End	Middle	None	Emotional	Rational	Mix	None	
X_{DIR}	30	3	0	33	20	13	0	7	26	0	16	17	22	17	6	2	3	4	24	7	28	3	1	282
$X_{%DIR} = \frac{X_{DIR}}{N_{DIR}}$	91%	9%	0%	100%	61%	39%	0%	21%	79%	0%	48%	52%	67%	52%	18%	6%	9%	12%	73%	21%	85%	9%	3%	
X_{DIR}	38	1	3	36	27	12	0	7	32	0	21	18	28	22	11	3	6	4	26	17	28	6	0	346
$X_{%IND} = \frac{X_{IND}}{N_{IND}}$	97%	3%	8%	92%	69%	31%	0%	18%	82%	0%	54%	46%	72%	56%	28%	8%	15%	10%	67%	44%	72%	15%	0%	

Appendix P: Cross-purpose percentual differences per framing attribute

		Attribution frame				Impact frame				Spatial frame				Temporal frame				Valence frame			
		Human activity	Natural process	Mix	None	Humans	Nature	Mix	None	Global	Local	Regional	None	Far future	Near future	Now	None	Negative	Positive	Mix	None
$\Delta_{\%DI} = X_{\%DI} - X_{\%ND}$		3%	0%	0%	-3%	-13%	-25%	-25%	12%	9%	-1%	7%	-15%	-2%	0%	-5%	7%	-9%	10%	4%	2%
$\Delta_{\%ND} = X_{\%ND} - X_{\%DI}$		-3%	0%	0%	3%	13%	25%	25%	-12%	-9%	1%	-7%	15%	2%	0%	5%	-7%	9%	-10%	-4%	-2%

		Word of mouth		Gender		Goal comm.		Mood of the character			Narrative written on behalf of...			Persuasion route			Place of fund request				Sentiment			
		No	Yes	Female	Non female	No	Yes	Heroic	Needy	None	...someone else	...the author	...no one	Central	Peripheral	Mix	Beginning	End	Middle	None	Emotional	Rational	Mix	None
$\Delta_{\%DI} = X_{\%DI} - X_{\%ND}$		-7%	7%	-8%	8%	-9%	9%	0%	3%	-3%	0%	-5%	5%	-5%	-5%	-10%	-2%	-6%	2%	6%	-22%	13%	-6%	3%
$\Delta_{\%ND} = X_{\%ND} - X_{\%DI}$		7%	-7%	8%	-8%	9%	-9%	0%	-3%	3%	0%	5%	-5%	5%	5%	10%	2%	6%	-2%	-6%	22%	-13%	6%	-3%

END OF THE REPORT
