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Unlocking the Power of the Crowd

A Case Study Analysis of the Potential of Green Crowdfunding Platforms to accelerate Sustainability Transitions

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Abstract

In light of the ever-increasing urgency to successfully tackle environmental challenges that arise around the globe, growing attention is given to bottom-up approaches such as sustainable grass-root movements, to incubate and foster disruptive change. Yet, despite their salient importance, lack of financial resources has often brought such endeavors to an abrupt halt. More recently, new hopes have been evoked by the practice of online crowdfunding, which has slowly established itself as a new, alternative instrument to help fill the funding gap for grass-root entrepreneurs.

Since crowdfunding itself and especially crowdfunding within a sustainability context is currently still an under-researched field, this thesis intends to advance academic understanding thereof by studying the potential of green crowdfunding platforms for accelerating sustainability transitions within the energy regime. Against this background, this paper complements the concepts of the Multi-Level Perspective with Business Ecosystem theory to lay the theoretical groundwork that allows to systematically analyze the case study of the Dutch crowdfunding platform Greencrowd.

Findings showcase that Greencrowd acts as leader of its respective ecosystem, aligning and coordinating actors and activities in its immediate environment to enable green entrepreneurs to not only gain access to funding, but, perhaps even more importantly, to secure societal support and grant access to mainstream markets.

Due to this dualistic capacity, crowdfunding platforms seem to possess significant potential to accelerate sustainability transitions. Yet, results also illustrate the dependency of this value proposition on financial and political institutions that operate outside the direct control of the crowdfunding platform. Thus, this thesis concludes, that in order to fully exploit their potential, green crowdfunding platforms need to systematically nurture and strengthen their ties with these stakeholders. Entering into close collaborations is regarded as highly beneficial for all involved parties and might form the basis for a new, promising approach towards managing sustainability transitions.

Keywords: Sustainability transition, Crowdfunding Platforms, Business Ecosystems, Multi-Level Perspective

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1. Introduction

1.1 Background

Excessive greenhouse gas emission, water pollution, agricultural land degradation, environmental disasters such as the Deepwater Horizon oil spill in the Gulf of Mexico – the list of man-made impacts on the earth’s ecosystem is long, and has accumulated significantly since the era of Industrialization started off in the 18th century (Goudie, 2019; Stockholm Resilience Centre, 2015).

In light of this, researchers have proposed that the earth currently finds itself in a new geological epoch – *Anthropocene* – suggesting that mankind itself has turned into the driving force that is shaping the global geophysical system (Crutzen, 2002; Steffen et al., 2007).

Whilst this epoch has brought along an unprecedented increase in prosperity, living standards and economic growth, it has also triggered a surge in global population, consumption levels and associated resource depletion (Rockström et al., 2009; Steffen et al., 2007; Stockholm Resilience Centre, 2015).

Within this context, the release of the Club of Rome report *The limits to growth* (Meadows et al., 1972 // 1982) in 1972 was one of the first prominent publications that critically pinpointed towards the consequences an ongoing industrial growth will cause and the limitations it eventually would face.

Questioning the future viability of capitalistic growth ambitions, the report sparked public debates and was met with criticism both from academia as well as economists (Krueger and Gibbs, 2007; Vermeulen and Jongh, 1976). Nevertheless, it paved the way for an increased awareness and sensitivity towards sustainability issues and should receive further momentum, most notably through the *Brundtland report* and its definition of sustainable development: “*Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*” (World Commission on Environment and Development, 1987, p. 54).

More recently, scientists have revisited the Club of Rome concept and attempted to define nine interdependent planetary boundaries that should act as “*planetary playing fields*” (Rockström et al., 2009, p. 5) for humans (Rockström et al., 2009; Schlaile et al., 2017).

Pushing beyond these boundaries would significantly undermine the planet's ability to self-regulate itself and can lead to irreversible environmental changes (Rockström et al., 2009; Stockholm Resilience Centre, 2015).

Due to the multi-faceted complexity of the sustainability issue it is argued that tackling it would require “*radical systemic change*” (Schlaile et al., 2017, p. 2), which is at the core of the recently uprising sustainability transition literature. The term *sustainability transitions* can be defined as “*long-term, multi-dimensional, and fundamental transformation processes through which established socio-technical systems shift to more sustainable modes of production and consumption*” (Markard et al., 2012, p. 956).

A key framework within this transition management research field is the *Multi-Level Perspective (MLP)*, which seeks to explain such transformations through the interaction of landscape developments, technological niches and socio-technical regimes (Geels, 2004; Kern and Smith, 2008; Schot and Geels, 2008; Vasileiadou et al., 2016).

The Landscape level describes external factors which go beyond the control of system actors, but are nevertheless shaping their operations and interactions (Geels, 2004; Kern and Smith, 2008; Schot and Geels, 2008). Socio-technical regimes can be characterized as mutual, interdependent networks of broad social groups that are centered around socio-technical systems (bringing together production, distribution and usage of technology), following cognitive, normative and regulative rules (Geels, 2004). Lastly, the niche level comprises spaces that are sheltered away from mainstream market dynamics and act as birthplace for radical innovations (Geels, 2004; Schot and Geels, 2008).

Owing to its negative externalities and direct aggravation of the ongoing climate change, the incumbent energy regime is seen as one of the industry sectors that are most urgently in need of a transition towards more sustainability and improved environmental efficiency (i.e. Rohracher, 2008; Vainio et al., 2019).

However, due to the lock-in state of the existing energy regime, incumbent actors often oppose fundamental changes and instead leverage their power to resist external pressures and promote the status-quo (Geels, 2014).

Geels (2014) exemplifies this by showcasing several strategies utilized by energy regime actors in the UK to resist demands for more sustainable development. According to his

analysis, the British coal industry for instance successfully managed to even increase market shares in the early 2000s by promising future technology innovations that would reduce carbon emission of coal, thereby repositioning itself in the public discourse as *clean coal* and fending off calls for a departure from fossil energy (Geels, 2014).

Due to the strong position of energy regime actors and their resistance to empower transformative change, transition management scholars stress the importance of niches to incubate and diffuse path-breaking innovations (i.e. Geels, 2011; Schot and Geels, 2008). According to the MLP-framework, niches itself however can't bring about disruptive change on their own, but instead require the interplay with the external landscape level as well as the existing regime itself (Geels, 2011; Schot and Geels, 2008).

One of the key issues that sustainable energy niches face, is the limited access to external early-stage financing, owing to high upfront costs as well as elevated investment risks associated with the development of green energy technologies (Lam and Law, 2016; Würtenberger et al., 2013). This is further exacerbated by the expiration of many public niche subsidy initiatives, and a potential upswing of global interest rates, which can for instance already be observed in the US (Frankfurt School-UNEP Centre/BNEF, 2018; Geels, 2013).

Within that context, crowdfunding has been attested the potential to tap into the existing funding gap, thereby fostering path-breaking change that could eventually disrupt the incumbent energy regime (Lam and Law, 2016; Testa et al., 2019; Vasileiadou et al., 2016).

Crowdfunding allows entrepreneurs to raise external financing through utilization of a public audience, which receives monetary or non-monetary benefits in return (Belleflamme et al., 2010; Belleflamme et al., 2014; Bouncken et al., 2015). This process is typically steered through an intermediary platform that links the two parties, thus forming a two-sided market ecosystem (Eisenmann et al., 2006; Nielsen, 2018).

1.2 Research Gap & Study objectives:

The phenomenon of crowdfunding has sparked increasing interest and coverage in academic literature (see i.e. Belleflamme et al., 2010; Bouncken et al., 2015). More recently, scholars have also turned attention to how crowdfunding can foster a transition towards more sustainability:

Within this emergent research field, most papers have focused on green crowdfunding campaigns and associated project owners. Main emphasis is placed on success determinants of such campaigns (see Bonzanini et al., 2016; Calic and Mosakowski, 2016; Hörisch, 2015; Hörisch, 2018), the influence of differing institutional settings (Butticè et al., 2019) or the usage of crowdfunding throughout the lifecycle of green energy projects (Lam and Law, 2016). These contributions have however thus far delivered results that are, at times, opposing, for instance Calic and Mosakowski (2016) find that the sustainability orientation of crowdfunding campaigns positively affects fundraising success, whereas Hörisch (2015) concludes that no such positive relationship is given.

Interestingly, despite being viewed as “fundamental” (Petruzzelli et al., 2019, p. 145) for the success of green crowdfunding campaigns, the explicit role of crowdfunding platforms is largely neglected within academic research.

This becomes also apparent in more systemic approaches, such as the paper by Vasileiadou, Huijben and Raven (2016), who draw on the aforementioned MLP-literature to evaluate the potential of crowdfunding within the Dutch energy regime. The researchers conceptualize crowdfunding as a novel business model that is operating within a niche and argue that crowdfunding not only facilitates access to funding for green entrepreneurs, but also helps to boost societal support (ibid). How crowdfunding platforms concretely manage to contribute towards this, is however not covered by the researchers, who instead focus on evaluating the extent to which crowdfunding has stabilized as a niche.

Similar to the prior paper, Testa et al. (2019) take on a MLP-stance to examine existing literature on crowdfunding and the role it can play for a sustainability transition. Yet, emphasis is being placed on green entrepreneurs as well as investors, thus not specifically accounting for the part of the crowdfunding platform within that interplay (ibid.). The academics however themselves stress that analyzing the intermediary role that crowdfunding platforms play, should be regarded as highly relevant for future research undertakings (ibid.).

Overall, the conducted literature review reveals, that the role of the crowdfunding platform itself for a sustainability transition is largely neglected within academic research. This seems however crucial due to the central position such platforms possess in enabling and steering the crowdfunding process.

To overcome this identified research gap, the research question of this thesis therefore is defined as follows:

“How can green crowdfunding platforms accelerate a sustainability transition within the energy regime?”

The intention and goal of this thesis thereby is twofold:

First, it is sought to develop a holistic framework that allows to systematically analyze the role that such platforms can play in contributing towards a sustainability transition.

To achieve this, the thesis will draw on two distinct academic research streams: MLP and Business Ecosystem literature. Whilst the prior will serve as a theoretical groundwork for understanding systemic changes that can trigger transitions from one regime to another, the latter will serve as guideline for analyzing how changes can potentially be brought about by the crowdfunding platform as central actor.

Second, this framework will be applied to the case study of the Dutch crowdfunding platform Greencrowd, which has specialized in the funding of sustainability projects. In doing so, it is hoped to elicit further understanding that can help to answer the research question and complement theoretical knowledge with practical insights.

1.3 Structure of the thesis

To answer the research question, this thesis is structured as follows: Chapter 2 will start off with a literature review of the crowdfunding phenomenon, as well as the MLP and Business Ecosystem theory. Drawing on this, green crowdfunding platforms are attempted to be conceptualized from a theoretical angle and complemented by insights on the concepts of platform governance and design. Next, chapter 3 will present and critically evaluate the methodological choices of this paper. Building on the case study of Greencrowd, chapter 4 will showcase and analyse findings, before chapter 5 will discuss these results from a Business Ecosystem as well as MLP perspective. In chapter 6, this thesis closes with a consideration of possible implications of overall findings and potential avenues for future research.

2. Literature Review

The literature review of this thesis commences with an introduction into crowdfunding, its origins as well as its functioning and involved actors. To then arrive at a theoretical conceptualization of green crowdfunding platforms, the MLP-perspective as well as business ecosystem theory will be presented. This chapter closes with an analysis of platform design and governance elements that seem relevant for the research scope of this thesis.

2.1 Crowdfunding

2.1.1 Background and recent developments

Crowdfunding can be defined as an innovative funding tool that allows entrepreneurs to raise external financing through utilization of a public audience which receives monetary or non-monetary benefits in return (Belleflamme et al., 2010; Belleflamme et al., 2014; Bouncken et al., 2015).

It is argued to be situated within the broader field of crowdsourcing, which Belleflamme, Lambert & Schwienbacher (2014) define as *“using the crowd to obtain ideas, feedback and solutions to develop corporate activities”* (Belleflamme et al., 2014, p.4). A firm thereby effectively *“outsources specific tasks essential for the making or sale of its product to the general public”* (Kleemann et al., 2008, p. 6). By providing financial means to funded projects, crowdfunding helps to contribute towards project development, which is why it can be regarded as forming a sub-set of crowdsourcing (Belleflamme et al., 2010).

Whilst crowdfunding has experienced a surge in popularity in recent years, its underlying principles date back several decades (Short et al., 2017). For instance in 1885, the pedestal for the statue of Liberty was successfully funded via an open call to the readers of the New York World newspaper, who contributed on average USD 1 in return for having their names published as contributors to this investment in a separate newspaper issue (BBC, 2013).

Through the more recent advent of new technologies such as the Internet and Web 2.0, access to larger public audiences has been facilitated significantly for entrepreneurs that are in need of funding (Belleflamme et al., 2010; Kleemann et al., 2008). In line with that,

crowdfunding has become increasingly established as an alternative financing instrument, with a global market volume of USD 34 billion in 2017 (Fundly, n.d.).

Typically, it is distinguished between the following crowdfunding modes: Donation, Equity, Loan and Reward (Belleflamme et al., 2014; Bouncken et al., 2015).

The donation mode is rather common among creative projects and provides investors with purely immaterial rewards, such as public acknowledgement by fundraisers (Bouncken et al., 2015).

Contrastingly, equity and loan crowdfunding are focusing on providing material rewards. In the case of loans, lenders receive a fixed interest rate on their provided principal. In case of equity investments, crowd funders own stakes in the issuing firm and thus participate directly in the company's profits (ibid.).

Lastly, reward crowdfunding represents a hybrid model where material and immaterial compensation is provided to investors. This can range from the aforementioned public acknowledgement of the investors to issuing pre-purchase options for newly developed products. (ibid.)

2.1.2 The crowdfunding process & involved actors

Characteristically, three key players are involved in the crowdfunding process:

Investors (also referred to as crowd funders), fundraisers (also known as project owners) and the crowdfunding platform.

Project Owners are typically small and medium-sized firms or entrepreneurs that seek to secure funding for launching new business ideas or the extension of existing ones (Belleflamme et al., 2014; Nielsen, 2018). Further, individuals might make use of crowdfunding to fund smaller projects such as artistic ones (ibid.). Besides financial motives, Gerber and Hui (2013) identify amongst others the desire to raise awareness of work, receiving feedback and gaining approval as motivation of project owners to opt for crowdfunding.

Next, investors form a group of commonly diverse individuals – the crowd – that supply projects with the necessary funding (Bouncken et al., 2015). Individual investment amounts

– which are typically comparatively small – are bundled together through the platform and forwarded to project owners (Bouncken et al., 2015; Leimeister, 2012). Motivation among investors can range from being purely reward-oriented towards more idealistic motives such as helping others, or supporting a cause (Gerber and Hui, 2013). Besides passively investing into projects, crowdfunders can also choose to actively support campaigns by promoting and sharing it within their social network (Gerber and Hui, 2013; Nielsen, 2018).

Lastly, the platform itself structures and orchestrates the relationship between project owners and investors (Belleflamme et al., 2014; Bouncken et al., 2015). Platforms can follow a single investment model - equity, donations, loans or rewards - or offer a mix thereof (Danmayr, 2014). Similarly, platforms may decide to dedicate themselves to a particular investment focus such as creative or social projects, or opt for a more diverse scope (Bouncken et al., 2015).

The crowdfunding process is then generally structured as follows: Initially, project owners submit a business plan to the crowdfunding platform, specifying the business goals and activities, as well as associated plans for the use of the capital that is intended to be crowdfunded. Further, the type of return that investors will receive in exchange for their financial contributions is defined. (Griffin, 2013; Mitra, 2012)

The crowdfunding platform reviews the provided material and decides whether or not to publish the project on its website, which would make it then publicly accessible for registered investors (Bouncken et al., 2015).

The way the campaign is displayed on the online-site is depending on the parameters set by the platform, and may for instance encompass a photo gallery of the product or service, a sales pitch by the project owner, or an overview of the benefits an investor would gain (Nielsen, 2018). Based on this, the investors can decide to invest in the proposed project. In collaboration with project owners, platforms can define a minimum threshold that needs to be reached within a certain timeframe so that funds will be forwarded to the prior – referred to as all-or-nothing model – or alternatively employ a so-called keep-what-you-get model where project owners receive all investments (Bouncken et al., 2015).

2.2 Multi-level perspective on sustainability transitions

As outlined in the introduction of this thesis, transitioning towards a more sustainable society represents a highly relevant and increasingly pressing issue, fueled by ongoing environmental and socio-political challenges.

Within this context, the *Multi-level-perspective* (MLP) has experienced increasing popularity among sustainability scholars, allowing to model the complex, dynamic interplay that transformational processes necessitate and to deduct possible avenues of how a sustainability transition can be nourished and accelerated (Geels, 2004; Kern and Smith, 2008; Schot and Geels, 2008).

The MLP-literature is informed by research on historical cases of transitions within particular industries, most prominently conducted by Frank Geels, aiming to gain a better understanding of how these transitions occur (Geels, 2002, 2004; Kern and Smith, 2008).

At the core, the MLP-framework interprets transitions as being the outcome of inter-level processes between landscape developments, technological niches and socio-technical regimes (Geels, 2004). Geels (2004) defines the three analytical dimensions as follows:

Socio-technical regimes represent the “‘*deep structure*’ or *grammar*” (Geels, 2004, p. 905) of underlying socio-technical systems, seeking to stabilize the latter. Socio-technical systems are in return defined as a cluster of a widespread set of elements such as user practices, knowledge, and markets, which – by being linked together through the respective socio-technical regime - seek to fulfill societal functions, for instance transportation or the provision of energy (Geels, 2004; Geels, 2005; Kern and Smith, 2008).

Socio-technical systems however don’t operate autonomously, but instead are purposefully created and steered by a network of interlinked actors and social groups, i.e. public authorities, firms or universities (Geels, 2005).

The regime itself is then the overarching structure, which guides the activities of actors and social groups through cognitive, normative and regulative rules, thus consequently also influencing the socio-technical system. Ultimately, regimes operate and evolve based on co-dependent interaction of the three elements rules, actors/social groups, as well as the socio-technical system itself (Geels, 2004).

This co-dependence and alignment provides the overall regime with the stability which allows it to fulfill societal functions (ibid). However, owing to this stable structure, socio-technical regimes are resistant to change, finding themselves in a locked-in position allowing only for incremental, path-dependent development (Geels, 2011).

Niches then form the second analytical dimension of the MLP-framework. Geels (2004) defines niches as “*locus of innovation*” (Geels, 2004, p. 912), facilitating the emergence and further development of radical novelties. These niches are sheltered away from the competitive pressure of mainstream markets, thus empowered “*to deviate from the rules in the existing regime*” (ibid). This is seen as a prerequisite to depart from the path-dependent trajectory of regimes and to develop and test solutions of which incumbents would not be capable of due to their locked-in nature (Geels, 2004; Schot and Geels, 2008).

Lastly, the socio-technical *Landscape* forms the third analytical dimension of the MLP-framework. It is defined as the “*exogenous environment*” (Geels, 2004, p. 913; Schot and Geels, 2008, p. 913) that surrounds regimes and niches. These exogenous factors, such as political or economic determinants, are outside the control of regime or niche actors, but nevertheless have a strong influence on the overall system. This impact can express itself either gradually as for instance through changes in macro-politics, or can happen more abrupt, i.e. caused by economic shocks. (Geels, 2004; Sorrell, 2018)

The MLP-framework suggests that transitions are essentially “*shifts from one regime to another regime*” (Geels, 2011, p. 26). These shifts are triggered through landscape changes that exert pressure on incumbent regimes, resulting in tension and potential misalignment, thereby opening up spaces through which niche innovations can enter and diffuse within the existing socio-technical regime, eventually leading to its disruption (Geels, 2004; Sorrell, 2018). The interplay of these transformational processes is also illustrated below:

Increasing structuration
of activities in local practices

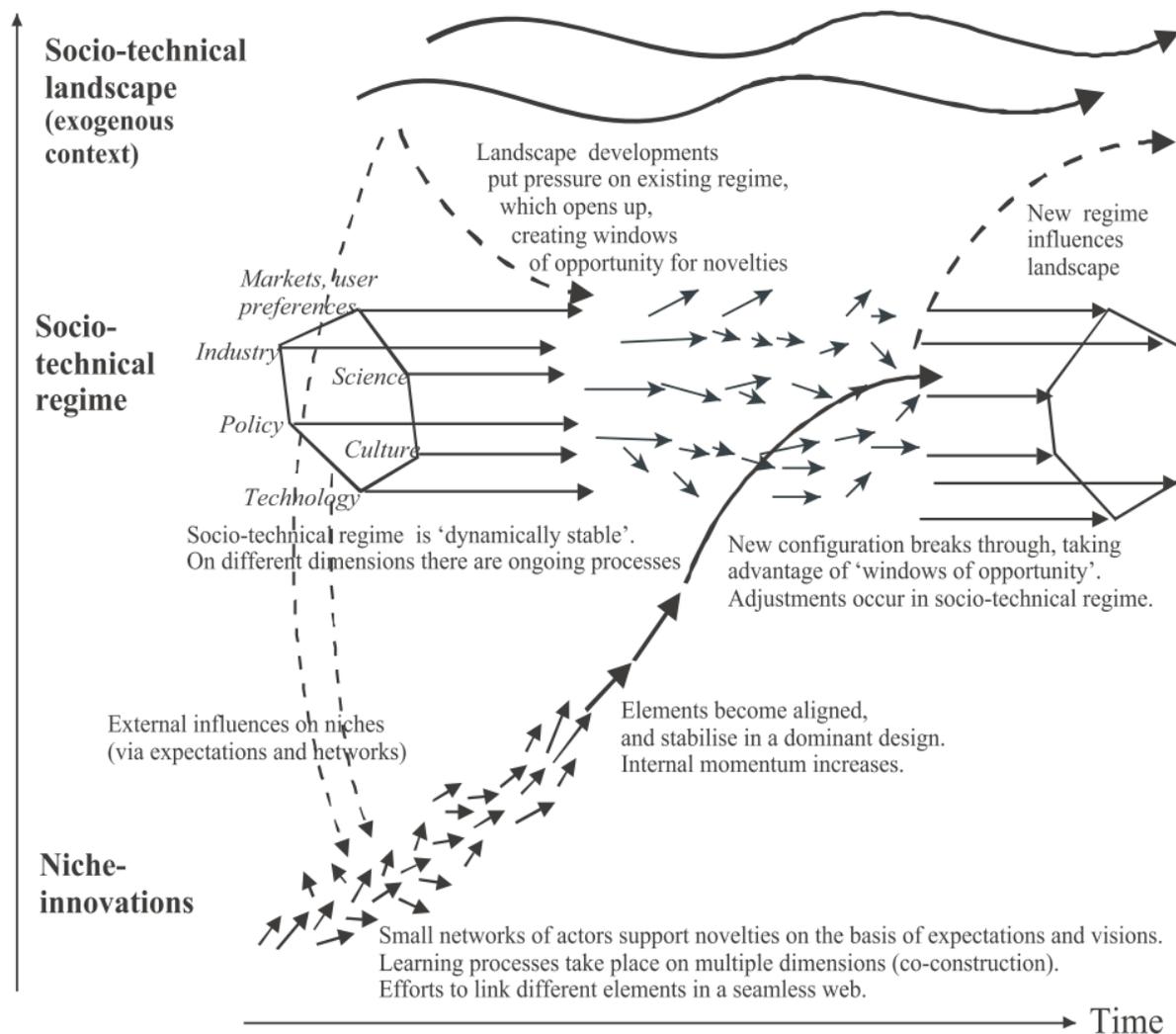


Figure 1: Multi-Level Perspective on transitions, Geels, 2011, p.28

Within the energy regime the ongoing climate change can be interpreted as representing such a landscape effect that is putting the current regime under pressure, potentially allowing for the break-through of niche energy innovations.

However, whilst the MLP-stream has proven useful in advancing transition management on a systemic level, it has been criticized for lacking a managerial and practical approach that could support the analysis on a firm-level (Boons et al., 2013; Loorbach and Wijsman, 2013).

Yet, since the research question is focusing on the specific role of green crowdfunding platforms within sustainability transitions, it seems advantageous to complement the MLP-perspective with a more micro-level angle. To account for this, the following will introduce the business ecosystem literature as second key research stream underlying this thesis. In doing so, the macro-level orientation of the MLP-literature will be complemented with a micro-level analysis on the platform level, allowing for a more holistic analysis.

2.3 Business Ecosystems

Building on a biological metaphor, Moore (1993) popularized the term business ecosystem, which he defines as an environment where “*companies co-evolve capabilities around a new innovation: they work cooperatively and competitively to support new products, satisfy customer needs, and eventually incorporate the next round of innovations*” (Moore, 1993, p. 76). This definition thus encouraged a move away from corporate silo mentality and towards a consideration of the interconnectedness and mutual dependence amongst firms and associated stakeholders. Since Moore’s publication, the metaphor has proven to be central to new approaches towards analyzing strategic decision-making and business relationships in complex environments (Anggraeni et al., 2007).

For the purpose of this thesis, it seems beneficial to model the environment in which a green crowdfunding platform is operating as such a business ecosystem, thereby accounting for the complexity that its role implies, and the joint value creation that underlies the crowdfunding process. Similar approaches have been undertaken elsewhere, for instance by Presenza et al. (2019), who argue that the interplay and interdependence of actors involved in a social crowdfunding context is best modelled by taking a business ecosystem approach. To arrive at a conceptualization of the crowdfunding ecosystem, this thesis will follow Adner’s definition of ecosystems, which he describes as “*the alignment structure of the multilateral set of partners that need to interact in order for a focal value proposition to materialize*” (Adner, 2017, p.40).

To guide the analysis of ecosystems, Adner (2017) suggests to group them into two distinct constructs: *Ecosystem-as-affiliation* and *ecosystem-as-structure*. The former operates on a macro-level and stresses the interdependence of relationships between the different ecosystem participants, highlights the potential for fruitful, symbiotic collaborations between stakeholders and places emphasis on the role of the focal ecosystem actor (Adner, 2017).

Contrastingly, the *ecosystem-as-structure* approach regards the value proposition as the “*foundation*” of the respective ecosystem and analyzes the activities and alignment structure which are necessary in order to jointly achieve value creation (Adner, 2017). Further expanding on this, Adner identifies four elements that make up the structure of an ecosystem: *actors*, *activities*, *links* and *positions*. It is through the successful alignment of these elements that an overarching ecosystem value proposition can be achieved. (Adner, 2017)

For the purpose of this thesis, the structuralist approach is chosen over the ecosystem-as-affiliation method, due to the greater emphasis on the “*alignment structure*” (Adner, 2017, p. 42) within an ecosystem. Secondly, the activity-centered, rather micro-level orientation of the ecosystem-as-structure concept is expected to facilitate an in-depth analysis of the crowdfunding ecosystem compared to the macro-level perspective of the ecosystem-as-affiliation approach.

Within the ecosystem – and to accomplish joint value creation - scholars have pointed towards the importance of having an ecosystem leader or “*keystone*” (Iansiti and Levien, 2004, p. 73) organization, that structures and shapes collaboration and value creation efforts among interconnected actors (Gulati et al., 2012; Isckia et al., 2017; Jacobides et al., 2018; Wareham et al., 2013). Being the enabler and central player of the crowdfunding process, this thesis models the crowdfunding platform as such an ecosystem leader. It is further argued, that lead actors in return typically rely on design principles and governance mechanisms to orchestrate the overall ecosystem (Jacobides et al., 2018; Schrieck et al., 2016; Tiwana et al., 2010; Wareham et al., 2013).

2.4 Conceptualizing green crowdfunding platforms

To better grasp the potential of crowdfunding platforms for a sustainability transition, this thesis will complement the system-level approach of the MLP-literature with the micro-level orientation of the business-ecosystem-as-structure theorization. The latter will thereby provide insights on the actor level of the crowdfunding platform, whilst the prior will then help to situate these findings within a larger context (see illustration below).

Following Adner's structuralist ecosystem approach, this thesis models crowdfunding platforms as ecosystem leaders or keystone, who possess two levers through which they can steer their environment: ecosystem value proposition as well as ecosystem alignment structure (Adner, 2017; Walrave et al., 2018). As was shown, the latter can be further broken down into design principles and governance mechanisms.

Analyzing how green crowdfunding platforms manipulate ecosystem value proposition and achieve the necessary alignment structure, is in return expected to enhance the understanding of how green platforms can contribute towards a sustainability transition (see also illustration below)

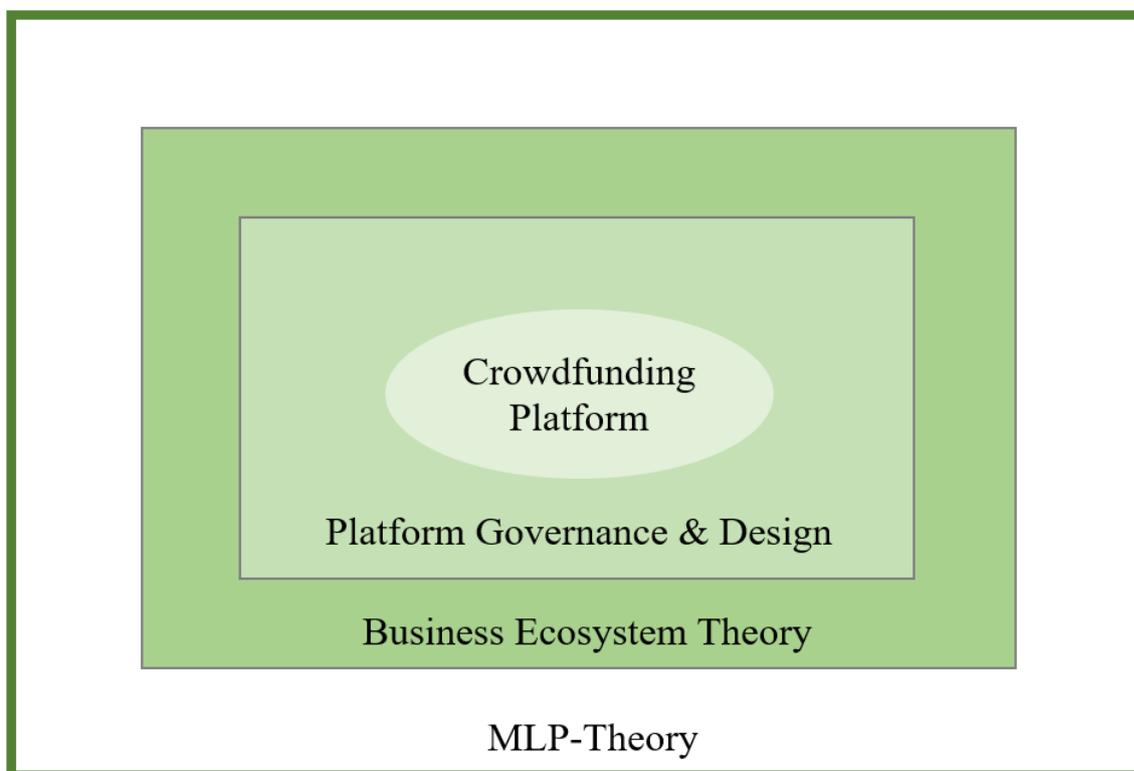


Figure 2: *Theoretical Framework for the Conceptualization of green crowdfunding platforms*

The research agenda of this thesis is consequently expanded as follows:

- 1.) To improve the understanding of the crowdfunding ecosystem, this thesis will utilize Adner's structuralist approach. First, the ecosystem value proposition will be scrutinized, before then seeking to identify related actors, activities, positions and links that are necessary for achieving said proposition. Refined sub-research questions are thus defined as:

“What is the underlying value proposition of the analyzed crowdfunding ecosystem?”

“Which actors, activities, positions and links are necessary for realizing the ecosystem value proposition?”

- 2.) To analyze how green crowdfunding platforms organize the overall alignment structure of the ecosystem, a refined sub-research question is defined as:

“What are the governance and design mechanisms employed by the crowdfunding platform to achieve ecosystem alignment?”

To elicit a more nuanced understanding of the way platform governance and design can be theoretically organized, the remainder of this literature review will focus on identifying principles and elements that underlie the two constructs.

2.5 Platform Design

Due to being an emergent field within research, platform design has so far been scarcely covered within academia and lacks generalized knowledge (Bartelheimer et al., 2018).

Schreieck, Wiesche and Krcmar (2016) define platform design as a “*conceptual blueprint of the whole ecosystem, including the partners and processes interacting on the platform*” (Schreieck et al., 2016, p. 8). To organize this blueprint, Kornberger (2017) suggests the usage of the following three design principles: *Interface Design*, *Participatory Architecture Design* and *Evaluative Infrastructure Design*.

Interface Design: Kornberger depicts the interface as meeting point between external and internal environment, organizing the exchange of information between involved parties. The interface thus serves a mediating function (Kornberger, 2017).

Design of Architectures of Participation: The second principle revolves around the question of how to encourage collaboration through the strategic choice of a suitable participation architecture. To facilitate this, offered products or services should be modular – referring to its decomposability into sub-units. Further, these sub-units should be small in size and overall integration costs to bring sub-units back together should be low. (Kornberger, 2017)

To illustrate this rather abstract description, the following will showcase the general participation design for crowdfunding platforms: Firstly, crowdfunding allows individual investors to contribute money to investment projects, thus each investor represents a module of the larger overall investment sum. Secondly, platforms typically allow for relatively small individual investments, thus fulfilling the granular aspect of Kornberger’s reasoning. Lastly, the integration costs for pooling the individual investments together are low due to the underlying IT-technology that the platform is using.

Design of Evaluative Infrastructure: For Kornberger, the evaluative infrastructure acts as a quality control measure, aimed at making decision-making for users more transparent by categorizing and hierarchically structuring an “*otherwise overwhelming amount of new products, idea and experiences*” (Kornberger, 2017, p. 184).

In doing so, an effectively designed evaluative infrastructure creates trust amongst its users and helps to reduce complexity. As examples of evaluative measures Kornberger (2017) lists ratings, rankings, Facebook's like button or algorithms such as Amazon's referral function.

2.6 Platform Governance

Being closely entangled with platform design, platform governance represents the second lever to orchestrate and shape the blueprint of a platform ecosystem (Tiwana et al., 2010).

Due to being different from traditional organizational forms, the key question a platform is facing, is how to achieve a successful ecosystem value creation and capture whilst having to surrender direct control, vertical integration and hierarchy (Williamson and Meyer, 2012).

To protect the platform ecosystem against opportunistic behavior of participants, governance mechanisms represent a powerful tool to instill trust and control into the system and achieve actor alignment (Cobben and Roijackers, 2018). Hein et al. (2016) conducted an academic literature search aimed at gaining an overview on existing research on platform governance. Ensuing, the authors analyzed, synthesized and grouped the findings into the following dimensions: *Governance structure, resources & documentation, accessibility & control, trust & perceived risks, pricing*, and lastly *external relationships* (Hein et al., 2016).

The first dimension *Governance structure* scrutinizes to which degree platform governance can be considered closed or diffused. Further, ownership and the way decision rights are divided up between involved ecosystem parties is analyzed.

Resources & Documentation aims at analyzing how transparent the platform acts, i.e. with regards to documentation. Additionally, boundary resources represent the resources which a platform is providing to complementors.

The third dimension *Accessibility & control* revolves around the way a platform evaluates output, filters input and imposes restrictions on platform accessibility and openness. This thus overlaps with the previously mentioned design principle of evaluative infrastructure introduced by Kornberger.

Fourthly, *Trust & perceived risks* investigates mechanisms the platform has set up in order to create trust and reduce individual risks.

Next, the *Pricing* dimension showcases the pricing structure and who is setting the prices.

External Relationships forms the last dimension and focuses on the way the platform manages inter-firm dependencies and collaboration with its ecosystem participants. This dimension strongly overlaps with the Architecture of Participation principle by Kornberger.

2.7 Linking Platform Design and Platform Governance

The above review of existing academic literature on platform governance and platform design has shown that both concepts are closely intertwined, with the one influencing the other and vice versa.

Accounting for this, the thesis will consequently seek to develop a framework that overarchingly incorporates both governance and design elements of platforms, instead of trying to analyze the two concepts separately from one another.

In that regard, a suitable contribution has been made by Tura, Kutvonen and Ritala (2018). The scholars developed a platform design framework, which however entails both design as well as governance elements. Four core elements are identified: *platform architecture*, *value creation logic*, *governance* and lastly *platform competition*.

Platform Architecture captures the core interactions that take place on the platform, overall market structure, key actors within this market and the degree of platform openness (Tura et al., 2018).

Value Creation Logic defines benefits the platform is able to offer and how stakeholders contribute to overall value creation.

Governance deals with leadership and ownership of the platform as well as rules and regulations that are enforced on the platform.

Platform Competition covers how users from different sides are intended to be attracted onto the platform, how the competitive strategy looks like and what future growth ambitions are.

Since this framework is however missing elements that have been introduced by Kornberger and by Hein et al., the following will attempt to synthesize all three contributions into one coherent model:

Due to the overlap between the three outlined frameworks, it was decided to re-arrange and merge several mechanisms together. These were then grouped into the following dimensions: *Governance structure*, *interface design & communication*, *architecture of participation*, *evaluative infrastructure* and *competitive strategy*. The value creation logic-dimension introduced by Tura, Kutvonen and Ritala was deliberately left out, since it is already covered through the first two sub-research questions.

Below is a description of each dimension and the constituting elements which stem from the three frameworks:

Governance structure:

This thesis loosely follows Tiwana's suggestion to define platform governance as "*who makes what decisions about a platform*" (Tiwana et al., 2010, p. 679).

Consequently, the elements leadership, ownership and platform rules advanced by Tura, Kutvonen and Ritala were linked and complemented with the decision rights aspect raised by Hein et al.

Interface Design and Communication:

The Interface Design takes on a crucial role to facilitate the exchange of information between involved parties that are linked through the platform. The thesis merged the *Interface Design* principle proposed by Kornberger with the *core interaction* element introduced by Tura, Kutvonen and Ritala. Through this it was hoped to elicit an understanding of the purpose of the platform interface and how communication is facilitated through it.

Architecture of Participation:

In line with the reasoning by Kornberger, this fourth dimension revolves around ways collaboration on a particular platform is encouraged and steered. To analyze this dimension in greater detail, the following mechanisms were subsumed and grouped together: *platform*

boundary resources, accessibility, openness and external relationship management introduced by Hein et al. as well as Tura, Kutvonen and Ritala.

Evaluative Infrastructure:

The key concern of this dimension is how the platform seeks to support decision-making of its users by reducing complexity, creating trust and ensuring quality. To analyze this, the following mechanisms were linked together: *Platform transparency, input control/gatekeeping, output control, trust & perceived risks.*

Competitive Strategy:

The dimension competitive strategy aims at investigating the growth ambitions of a particular platform, as well as the current competitive market dynamics. As such, this dimension adopts the elements *platform competitiveness* and *platform growth* of Tura, Kutvonen and Ritala's framework.

Below, the conceptualized platform design & governance model is presented in a tabular overview:

Dimension	Mechanisms	Description
Governance structure	<p><i>Leadership & Ownership</i></p> <p><i>Platform Rules & Decision Rights</i></p>	Who makes what decisions about a platform, i.e. how are decision rights distributed, how is ownership and leadership organized; centralized vs. diffused governance
Interface Design & Communication	<p><i>Interface Design</i></p> <p><i>Core Interactions</i></p>	<p>Interface as meeting point between internal and external environment.</p> <p>What are core interactions facilitated through the interface?</p> <p>How is communication organized?</p>
Architecture of Participation	<p><i>Platform Boundary Resources</i></p> <p><i>Platform Openness & Accessibility</i></p> <p><i>External Relationship Management</i></p>	<p>How is collaboration encouraged and steered on the platform?</p> <p>Who can access the platform?</p> <p>Are there restrictions on participation?</p>
Evaluative Infrastructure	<p><i>Platform Transparency</i></p> <p><i>Input / Output Control / Gatekeeping</i></p> <p><i>Trust & Perceived Risks</i></p>	<p>How is quality control ensured on the platform?</p> <p>What are measures to create trust and support decision-making of users?</p>
Competitive Strategy	<p><i>Platform Competitiveness</i></p> <p><i>Platform Growth</i></p>	<p>What is the competitive stance of the platform within their market?</p> <p>What are future growth ambitions?</p>

Table 1: Platform Design and Governance Framework, based on Hein et al., 2016; Kornberger, 2017; Tura et al., 2018

3. Methodology

In this chapter, the methodological choices that underlie this master thesis will be explained in greater detail. It is intended to provide the reader with a clear understanding of the rationale behind chosen research strategy and design, as well deliver insights into how data collection and analysis was conducted. The chapter then closes with a critical evaluation of the employed research method, specifically addressing the credibility, transferability, dependability and confirmability of this thesis.

3.1 Research Philosophy

“to know what you’re doing, you need to know how your model of knowing affects what you are doing” (Miles and Huberman, 1984, p. 20).

In line with this introductory remark by Miles and Huberman (1984), this sub-section is aiming at giving insights into the philosophical viewpoint of the author, which is in return steering the research philosophy and strategies applied in this paper (Creswell, 2014; Saunders et al., 2009).

According to Saunders et al. (2009) the key notion to be pointed out within this context is the individual understanding of the relation between knowledge and development thereof which the researcher brings with him. This personal view or *research paradigm* will then influence the research approach undertaken, or as put by Kivunja and Kuyine (2017, p. 26): *“It is the conceptual lens through which the researcher examines the methodological aspects of their research project to determine the research methods that will be used and how the data will be analysed”* (Creswell, 2014; Kivunja and Kuyini, 2017; Mackenzie and Knipe, 2006).

The author situates himself within the interpretivist paradigm. With regards to the research question it is concluded that studying the phenomenon in its natural context is most suitable, attesting that various, subjective perspectives on reality exist, a viewpoint that will also manifest itself in the research design which will be outlined later. Since crowdfunding for green energy projects is a new phenomenon that lacks rigorous academic understanding and theories, the author opts for an in-depth qualitative analysis thereof, interpreting the research

context of this paper as a complex playing field of social actors, which requires the phenomenon to be studied from multiple angles.

3.2 Research Strategy & Research Design

The research strategy forms a procedural framework for guiding the inquiry into the research problem and uncovering associated answers (Creswell, 2014; Saunders et al., 2009).

Yin (1994) suggests three guiding elements that should be taken into consideration when choosing an appropriate research strategy:

- *Type of research question*
- *Degree of control over behavioral events*
- *Extent to which the research is focused on a contemporary event*

Yin (1994) recommends the use of case studies for research that poses “*How*” or “*Why*” questions that focus on studying a contemporary phenomenon, with the researcher having little control over the analyzed events.

The thesis at hand revolves around a “*How*” research question (Element 1), which aims to analyze a contemporary phenomenon (Element 3) which is outside the control of the investigator (Element 2), within its natural context. Adding this to the interpretivist stance of the author, and in line with above reasoning by Yin (1994), an exploratory, qualitative case study design seems consequently the most suitable approach. Yin (1994) defines case studies as an “*investigation to retain the holistic and meaningful characteristics of real-life events*” (Yin, 1994, p. 3).

Having selected an overall research strategy, the next step is to break it down into an applicable research design. Specifically for Case Studies, Yin (1994) proposes two dimensions from which four distinct case study designs arise:

- *Single case vs. multiple case*
- *Holistic case vs. embedded case*

Analyzing multiple cases allows for a greater robustness of the study by seeking to replicate results from one case study to other case studies, thus enabling for more generalizable

inductive theory building (Saunders et al., 2009; Yin, 1994). Conversely, single cases are argued to be more applicable to critical, unique or revelatory cases (ibid.).

Further, when aiming to include an analysis of sub-units within a case, an embedded case study design is preferable (Yin, 1994). Otherwise, the holistic case design is the more suitable choice (ibid.).

The research question of this thesis revolves around ways how green crowdfunding platforms can accelerate a sustainability transition within the energy regime. The platform itself is seen as the greater unit of analysis, whereas project owners and investors constitute sub-units that are regarded as key actors to achieve joint value creation. Consequently, an embedded case study design is chosen. To account for the novelty of the crowdfunding phenomenon within the sustainability context and the intention to conduct an in-depth exploratory research, a single case study design will be applied.

As research technique, in-depth interviews were regarded as most suitable to elicit a thorough understanding of the research field. Interviews were conducted in a semi-structured manner. Whilst offering a guiding frame of key questions and themes, this technique offers sufficient flexibility for the interviewer to scrutinize topics more closely that emerge during the interview and haven't been considered beforehand (Gill et al., 2008; Saunders et al., 2009).

3.2.1 Case Selection

The paper applied a purposeful sampling strategy which aims at identifying cases that are rich in information and thus allow for in-depth analysis (Patton, 1990). To limit the number of possible cases to choose from and to make selection as transparent as possible for the reader, criteria were defined to guide this selection process.

The criteria and the rationale for choosing them is illustrated below:

Criterion 1: Limit analysis geographically to the Netherlands

Generally, the geographical focus of this paper was limited to one specific country, to guarantee an identical context for the cases analyzed, i.e. regarding the institutional and legislative setting.

Specifically, the Netherlands were chosen as focal country. This choice is expected to offer an interesting context due to its pioneering role in implementing the sustainability transition approach into national policy, as well as being one of the early adopters of crowdfunding as an alternative financial funding instrument (crowdsourcing.org, n.d.; Laes et al., 2014).

Considering that the research question of this thesis is thematically located at the intersection of crowdfunding and sustainability transition, the Netherlands are thus regarded as a promising case study environment.

Criterion 2: Limit crowdfunding mode to crowdlending

As pointed out before, the four most common crowdfunding models are: Donation, Equity, Loan and Reward. In the Netherlands, crowdlending is the most common form, raising EUR 86.47 million in 2017, compared to EUR 7.79 million via rewards, EUR 7.62 million via donations and EUR 17.82 million via equity-based crowdfunding (Cambridge Centre for Alternative Finance, 2019). Given the popularity of crowdlending, it was consequently chosen as focal mode of crowdfunding.

Criterion 3: Limit Analysis of Green Energy Projects to Solar Projects

Despite wind power currently being the dominant source of renewable electricity production in the Netherlands, solar power is showcasing the strongest growth rates of all renewable energy sources, recording an increase of more than 40% from 2017 to 2018 (CBS, 2019). Given the technological advancements in the Solar Photovoltaic (PV) field and the attested potential for Netherlands, this thesis chose to focus on Solar PV projects as proxy for green energy ventures (Deloitte Netherlands, 2018; Pandey et al., 2016).

To sum up, this thesis limited the pool of potential cases to crowdfunding platforms that were operating in the Netherlands, had crowdlending as mode of financing and were funding predominantly solar projects.

Having established the selection criteria, an initial research was conducted to gain an overview of the Dutch crowdfunding market and operating green energy platforms. The following platforms were identified during this search process:

Platform	Crowdfunding Mode	Investment Focus	Geographical Focus	No. of projects	Total investments
Zonnepanelendelen	Loan	Green Energy (Solar Panels)	Netherlands	60	n.a.
Duurzaam Investeren	Equity, Loan	Green Energy (diverse)	Netherlands	77	66 Mio. EUR
Greencrowd	Loan	Green Energy (diverse)	Netherlands	63	9.3 Mio. EUR
OnePlanetCrowd	Loan, Convertible Loan, Donation, Reward	Diverse with sustainability focus	Worldwide	252	41.92 Mio. EUR
Windcentrale	Equity	Green Energy (Windmills)	Netherlands	10	n.a.

Table 2: Overview Dutch Green Crowdfunding Platforms, based on *Duurzaam Investeren, 2019; Greencrowd, 2019; OnePlanetCrowd, 2019; Windcentrale, 2019; Zonnepanelendelen, 2019*

Platform *Windcentrale* was excluded from the sample since it had a different investment focus (windmills) and crowdfunding mode (equity). Similarly, *Duurzaam Investeren* and *OnePlanetCrowd* were removed from the sample due to offering a too wide array of funding types. Consequently, the two remaining platforms were *Zonnepanelendelen* and *Greencrowd*.

3.3 Data Collection & Research Process

3.3.1 Initiating contact with interview respondents

Having identified a suitable sample, initial contact was established by reaching out to Greencrowd and Zonnepanelendelen through email. The messages contained a formal request for an in-depth interview, supplemented by a description of the master thesis itself and a short introduction of the author. By offering the contact persons to conduct the interview at a location and time of their convenience within a predefined timeframe, it was hoped to increase the success rate of a positive response.

Feedback from Greencrowd was positive, whilst Zonnepanelendelen turned down the request after several failed attempts to initiate contact with them.

Having secured Greencrowd as key respondent for the larger unit of analysis (=platform), contact with the two sub-units of analysis – project owners and investors – was initiated.

To increase the probability of positive responses, it was Greencrowd itself, that initiated contact with investors as well project owners of funded projects.

Two project owners and one investor showed interest in participating in interviews and were subsequently contacted via email and/or phone by the author of this thesis to clarify the intention of the interview and coordinate meeting time and place. Except for platform Greencrowd itself, all other interview respondents will be anonymized. The two project owners will be labeled P1 and P2, the investor will be coded as I1.

3.3.2 Overview of interview respondents

Greencrowd is a Dutch crowdlending platform, specialized in the funding of green energy projects. The platform was founded in 2012, and since then (as of February 2019) has funded 63 projects with total investment amounts accumulating at about 9.3 million EUR. Main emphasis is being placed on solar energy projects, however there have also been hosted projects within i.e. the wind or the sustainable real estate sector. Greencrowd is closely intertwined with Greenspread, a Dutch consultancy firm, focused on the green energy field. As the interview with Greencrowd has shown, the crowdfunding platform was founded as an extension of the service offerings of Greenspread, aiming to provide funding alternatives for

its clients. The interview partner is project manager of Greenspread and responsible for the development of sustainable energy projects.

P1 is a private Dutch company that was specifically set up to realize a solar energy project for its parent company. The parent company is a public organization that is responsible for the waste management of eight municipalities within the region Rivierenland. As part of its operations, it utilized a landfill from 1969 onwards for the disposal of waste. After the landfill ran full in 2014, it was sealed and restored to being grassland. The intention of the solar energy project was to give a new purpose to the former landfill by using it as a solar park. The project was realized from 2017-2018. After the solar park was operational, a part of the original funding was refinanced via a crowdfunding campaign hosted on Greencrowd's website. The interview was conducted with the project manager of *P1*.

P2 is a local Dutch citizens' initiative, aiming to bring more sustainable energy to its municipality. The goal is to generate a minimum of 20% of local energy needs through sustainable sources such as sun or wind by 2020. As part of this agenda, the initiative is aiming to build the largest Dutch floating solar park, which is intended to consist of more than 6,000 solar panels, thereby being able to serve 600 private households with electricity. To cover the investment needs, most funds were acquired through banks, however part of the investment sum was raised through a crowdfunding campaign on Greencrowd's website. The interview partner is responsible for project development for *P2*.

I1 is a private, long-term investor in crowdfunding and client of Greencrowd since 2014. The interview with him served to gain a better understanding of the investor side and was complemented with an analysis of online investor comments related to the crowdfunding campaigns of *P1* and *P2*.

3.3.3 Interview preparation

Detailed upfront familiarization with the research topic is deemed as crucial to convey credibility to interview respondents (Saunders et al., 2009). It further serves as base for designing an interview questionnaire, providing an "*inventory of the categories and relationships*" (MacCracken, 1988, p. 32) that should be considered.

In line with this, most of the literature review was conducted prior to the interview appointments.

Ensuing, three versions of interview questionnaires were constructed: one for the interview respondent at Greencrowd (see Appendix A), one for the two interviews with project owners (see Appendix B), and one for interviews with investors (see Appendix C).

In general, the majority of questions were phrased open-endedly, to encourage interviewees to talk without overly leading the conversation towards particular replies (MacCracken, 1988).

In accord with the research question, most interview questions were phrased as how-questions, which were categorized around themes that had been discovered during the literature review and attempted to revolve around real-life experiences of interviewees to avoid being too abstract and hard to grasp (Saunders et al., 2009).

3.3.4 Conduct of interviews

Out of all interviews, two (Greencrowd and P1) had been located at the company's office. Due to time constraints, the interview with P2 was held via telephone and data from investors was collected by sending out an interview questionnaire via email as well as gathering investor comments related to the two chosen projects from Greencrowd's website.

Concerning the face-to-face as well as the telephone interviews, all participants were asked in the beginning for permission to audio-record the interview. Taping the interviews significantly facilitated the process of transcription.

3.3.5 Transcription of interviews

Transcription describes the reproduction process of spoken language into written words (Saunders et al., 2009). Voices have been raised that undertaken transcription methods are often addressed insufficiently by research papers (i.e. Ross, 2010; Tilley and Powick, 2004). To avoid this, the following aims to give a short insight into the applied transcription style and the reasoning for it:

In terms of transcription methods one can generally distinguish between naturalized and denaturalized approaches (Bucholtz, 2000; Davidson, 2009; Oliver et al., 2005). Naturalized transcription is as detailed as possible and places emphasis on including details of the interview such as laughter, intonation or body language, whereas denaturalized transcription excludes these speech elements (Mero-Jaffe, 2011; Oliver et al., 2005).

According to Lapadat (2000), the choice of transcription style is directly linked to the epistemological position and research paradigm of the researcher. Given that this thesis follows an interpretivist stance, the interviews were transcribed following a denaturalized approach, viewing the transcription process as interpretive and dependent on the choices of the transcriber. The focus was placed on eliciting the essence of the interview, which then formed the basis for the ensuing data analysis process.

3.4 Data Analysis

Data analysis is at the very core of a qualitative research project and aims to “*draw valid meaning*” (Miles and Huberman, 1994, p. 1) from previously collected data. Kawulich (2004) sums up this process as an initial immersion and familiarization with data, followed by identification of themes, patterns as well as relationships between data, before then displaying and writing up derived information. Dey depicts it more graphically as “*breaking data down into bits and then ‘beating’ the bits together*” (Dey, 2005, p. 31). The following will sketch the framework that was applied in steering and guiding this analytical procedure. In doing so, it was hoped to achieve a consistent, structured approach towards interpretation of data whilst at the same time making this process more transparent and comprehensible for the reader.

Broadly speaking, the data analysis approach that was chosen for this thesis is situated within the thematic analysis field. *Thematic analysis* is paraphrased as “*process for encoding qualitative information*” (Boyatzis, 1998), by “*identifying, analysing, and reporting patterns (themes) within data*” (Braun and Clarke, 2006, p. 82). Given the flexibility of this approach, blended with its ability to capture the intricacy of qualitative data, it is assumed to provide a promising fit for this thesis (Braun and Clarke, 2006; Guest et al., 2012). To add rigor and reliability to it, it was decided to follow a specific offspring that has emerged within the thematic analysis field: *Template Analysis*. Opposed to more traditional thematic analysis procedures, Template Analysis advocates the usage of a-priori defined themes which have been derived from an initial theory review (King, 2012). For this thesis, themes represent the higher-level classification of data, revolving around a key concept and contributing towards the understanding of a particular phenomenon that was raised through the research questions(s) (Braun and Clarke, 2006; Nowell et al., 2017). The goal is to capture “*something important in relation to the overall research question*” (Braun and Clarke,

2006, p. 86; Nowell et al., 2017, p. 86). The a-priori identified themes are however tentative and are re-assessed through inductive coding based on qualitative data analysis (Brooks and King, 2014).

King defines coding as “*the process of identifying themes in accounts and attaching labels (codes) to index them*” (Brooks and King, 2014, p. 4). Based on preliminary data coding, a coding template is created, which aims to “*usefully and meaningfully represent[] the relationship between different themes or codes*” (Brooks and King, 2014, p. 7). What follows is an iterative process of applying the template to new data and modifying and adjusting it when necessary (Brooks and King, 2014; King, 2012).

For the purpose of this paper, the coding process was structured as follows: After initial transcription and familiarization with the textual data, the text was first split up into meaning units and condensed, before then assigning descriptive codes to each of these units. Based on analysis and comparison of these codes, categories were formed, grouping codes together that seemed logically connected. Lastly, those categories were assigned to the a-priori themes (see appendix G for an overview of these themes). If no logical link between categories and deductively defined themes existed, new themes were created, or a-priori themes revised accordingly.

Below is an example of how a particular interview statement of Greencrowd was coded and ensuing thematized:

Statement	Condensation	Coding	Category	Theme
<p><i>“But we also thought that renewable energy requires for local support, and people from the environment of these projects. We wanted to give them an opportunity to participate.”</i></p>	<p>Renewable energy requires local support. Greencrowd wants to win local support by letting them participate in such projects.</p>	<p>Winning local support</p>	<p>Local support through participation</p>	<p>Value Proposition Crowdfunding</p>

Figure 3: Example of Data Analysis Procedure

This procedure thus moved from an initial mere descriptive nature of code assignment towards more interpretive levels of abstraction. By doing so, it was hoped to achieve a transparent, coherent approach towards eliciting latent meaning out of the textual data.

3.5 Evaluation of research method

Despite being an increasingly popular and acknowledged research methodology within the social sciences, qualitative inquiries have often been at the center of criticism, being labeled as “*soft science*” (Denzin and Lincoln, 2005, p. 4) and facing concerns that question i.e. their objectivity and trustworthiness (Kvale, 1994).

To overcome this accusation and to account for differences between qualitative and quantitative research, Guba (1981) developed a distinct set of criteria that act as proxies for the trustworthiness of a qualitative study: *credibility*, *transferability*, *dependability* and *confirmability*.

These dimensions will guide the evaluation of the chosen research method of this paper and will be discussed in the following:

3.5.1 Credibility of undertaken research

This dimension - which is comparable to the internal validity criterion of quantitative research - addresses the match between the views and opinions of the respondents and the way the researcher is representing them (Tobin and Begley, 2004). Proposed strategies to achieve this are i.e. to submerge oneself for an extended period of time into the research setting, or the practice of data triangulation, for instance through making use of several data collection methods and/or incorporating the perspectives of different stakeholders (Guba, 1981; Krefting, 1991).

To ensure credibility of the findings of this thesis, it was chosen to analyze how crowdfunding platforms can contribute towards a sustainability transition within the energy regime not only from the viewpoint of the platform itself, but to verify and contrast this with the perspective of two main stakeholders – investors and project owners. Given time and financial constraints it was not possible for the author to submerge himself for a longer time period into the Dutch green crowdfunding setting. Nevertheless, by conducting interviews with the platform Greencrowd, as well as with the project owner P1 at their office site, it was

possible to gain better insights into the environment of these players as opposed to doing the interviews remotely through telephone or video-communication services.

3.5.2 Transferability of undertaken research

Similar to external validity, transferability makes reference to the generalizability of qualitative research findings to other cases. Given that the nature of inquiry is context-bound, Guba (1981) argues, that it should not be the concern of the qualitative researcher to arrive at conclusions that are generalizable to whole populations, but instead to provide “*thick descriptions*” (Guba, 1981, p. 86), which allow external scientists to evaluate if findings are transferable to other contexts.

In line with this reasoning, the goal of this thesis was not to derive findings that are generalizable to all green crowdfunding platforms. Instead, the paper aimed at analyzing the specific case of Greencrowd in depth. To allow for potential transferability of the findings to other cases, a thick data set was collected through purposive sampling and the inclusion of sub-units of analysis.

3.5.3 Dependability of undertaken research

This criterion of qualitative trustworthiness - comparable to reliability – relates to the extent to which findings can be replicated, if the research was to be repeated in a similar context with the same respondents (Guba, 1981; Krefting, 1991). Given the dynamics of the research context and setting, as well as the central role the researcher himself plays in this process, identical replication of findings – as is typically the goal in quantitative approaches - seems not possible in qualitative studies (Krefting, 1991). Instead, Krefting advocates the idea of “*trackable variability*” (Krefting, 1991, p. 216), which is variability of findings that “*can be ascribed to identified sources*” (ibid.). To achieve this, Guba (1981) highlights the importance of establishing an “*'audit trail'*” (Guba, 1981, p. 87), making it possible for external readers to reconstruct the decision-making of the researcher and the way findings were derived from raw data. A transparent documentation of the research process therefore becomes central (Guba, 1981; Tobin and Begley, 2004).

To strengthen the dependability of this paper, this methodology chapter sought to provide a clear account of and reasoning for the undertaken research design, using a depiction of the author’s research philosophy and paradigm as point of departure. To increase transparency

further, the “*mysterious*” (Thorne, 2000, p. 68) process of eliciting meaning out of collected data was attempted to be designed in a structured, reconstructable manner, following King’s template analysis approach.

3.5.4 Confirmability of undertaken research

The fourth and last criterion of qualitative research – bearing resemblance to objectivity or neutrality – shifts the focus of objectivity away from the researcher and towards data and interpretation thereof (Guba, 1981; Hamberg et al., 1994). Findings should be derived from and grounded in the views and opinions of respondents and be devoid of preconceived perceptions and assumptions of the researcher (ibid.).

To achieve this, Guba (1981) suggests the usage of triangulation strategies to avoid potential investigator bias, as well as being reflexive and self-aware of epistemological assumptions and other preconceptions.

In this thesis, the research paradigm and philosophy of the author has been laid out in the beginning of this methodology chapter, seeking to make preconceived perceptions transparent to the reader. Throughout the further course of the research design development, the author attempted to be aware of his own interpretivist stance and avoid letting it guide to premature conclusions. By opting for the template analysis approach, it was made possible to derive findings inductively from raw data and combine it with deductively defined themes. The possible researcher bias was thus limited by having theory as guidance that diminished the interpretational deductive freedom of the author. Yet, inductive coding conversely also made sure that it was not merely the chosen theory alone that steered the research analysis and findings were instead deeply founded in the views and opinions of respondents.

Having a coding template makes it further possible for readers to reconstruct the way the author interpreted the data and arrived at conclusions. Nevertheless, one has to critically point out, that the conducted literature review led to a refinement of the initial research question, as well as the definition of sub-research questions. Whilst this was regarded as helpful to guide the case study analysis, it also narrowed down the potential meaning that could be derived from collected data.

4. Analysis and Findings

Building on the case study of the Dutch green crowdfunding platform Greencrowd, this chapter seeks to elicit meaning out of collected data, utilizing previously defined research questions as guideline. First, the ecosystem of Greencrowd is analyzed, placing emphasis on its value proposition as well as joint value creation processes. Having gained a better understanding of the overall ecosystem, the analysis then zooms in more closely on Greencrowd as focal actor, drawing on platform design and governance mechanisms to depict how Greencrowd is steering ecosystem actors toward joint value creation.

4.1 Analyzing the value proposition of Greencrowd's ecosystem

This section seeks to directly contribute towards answering the first sub-research question *“What is the underlying value proposition of the analyzed crowdfunding ecosystem?”*

To analyze the underlying value proposition of the ecosystem, the subject was scrutinized from the perspective of the crowdfunding platform Greencrowd, of the project owners, as well as investors. It was further distinguished between overall ecosystem value proposition, as well as the role that Greencrowd is expected to take on within this context. To make this analysis more tangible for the reader, exemplary quotes from conducted interviews are added.

4.1.1 Perspective of Greencrowd

From the perspective of platform Greencrowd (PG), green energy projects require local support and engagement to overcome potential resistance and improve the perception of such projects:

*“But we also thought that renewable energy **requires for local support**, and people from the environment of these projects.” (Greencrowd Interview, 2019, p.95)*

*“Talking about wind or solar, things that have an impact on the environment, so **you better have the people around the project around you in your favor, so that they don't protest against it or whatsoever.**” (Greencrowd Interview, 2019, p.95)*

Within this context, PG mentions the so-called not-in-my-back-yard (*NIMBY*)-phenomenon. *NIMBY* connotes that although public support for green energy projects is given, local citizens often oppose projects that are being realized in their immediate vicinity (Schwenkenbecher, 2017). PG stresses that crowdfunding can play an important part in overcoming this resistance by giving local citizens the opportunity to invest and profit from these projects, which in return is assumed to change originally negative perceptions into positive ones:

*“(...) unless they can partly be invested in it and they can also earn something with it. **And then a wind turbine is very beautiful and then a solar park is a very good thing instead of something that pollutes your horizon.**” (Greencrowd Interview, 2019, p.104)*

Additionally, PG highlights flexibility, speed and the potential to bear larger risks as key advantages crowdfunding possesses in general over more traditional ways of financing such as bank loans:

*“Because you see that the banks and the funds, **they can't provide the flexibility that the market demands. Quick money, maybe sometimes higher risks, not enormous portfolios but on the individual project level. And then apart from crowdfunding there are not that many different options actually.**” (Greencrowd Interview, 2019, p.105)*

Being closely entangled with the Dutch green energy consultancy Greenspread (see also chapter 3.3.2), Greencrowd is often used as a platform to refinance projects in which Greenspread has been investing equity, meaning that the amount of equity is being refinanced through Greencrowd. This refinancing mechanism represents a key value proposition for Greenspread, creating what PG refers to as “*snowball effect*” (Greencrowd Interview, 2019, p.96), allowing it to quickly invest equity into clients' projects and refinance these investments through crowdlending.

Role Expectation/Self-perception:

The role that Greencrowd itself is intending to play within the crowdfunding ecosystem, is closely linked to Greenspread. As PG points out, Greenspread's mission is to “*help the Dutch energy transition*” (Greencrowd Interview, 2019, p.96). Greencrowd was founded as a non-profit crowdlending platform to expand the service portfolio of Greenspread by

offering clients the opportunity to receive funding for their projects: *“But by running Greencrowd we wanted to be able to do more for Greenspread, to develop and finance more projects. So it is a means to the goal to let Greenspread grow.”* (Greencrowd Interview, 2019, p.95)

The companies are two separated legal entities, however, since the two directors of Greenspread are also on the board of Greencrowd, they are in fact closely organizationally intertwined. As a consequence, most projects that are hosted on Greencrowd’s platform are effectively forwarded through Greenspread itself: *“two out of three [projects] come from our own work floor”* (Greencrowd Interview, 2019, p.97).

This represents a major difference compared to other crowdfunding platforms, which typically have to attract new projects themselves. Nevertheless, external projects can still apply for funding via Greencrowd, however, admittance is restricted, reflecting that the platform does not want to act as a mere *“administration company”* (Greencrowd Interview, 2019, p.103) for green energy projects.

4.1.2 Perspective of Project Owner P1

Project Owner P1 opted for crowdlending to finance its sustainable energy project through local people that live in the area where the company is operating their business:

“The main goal was having a project for sustainable energy, the second what I told was to give a new use to the landfill, but also for our people here in our area, who are clients (...) for the household collection. To give them the opportunity to lend money to us.” (P1 Interview, 2019, p.107)

In the end they managed to receive 990,000 EUR in funding from 250 local investors, which P1 regards as a success. Yet, it needs to be pointed out, that crowdfunding was used as a refinancing instrument for a part of the original loan, and thus only represented a smaller part of the overall project funding.

Role Expectation:

Regarding the role that Greencrowd is expected to play, P1 emphasized their need for a crowdfunding platform that handled most of the processes and workload due to scarce time resources and lack of expertise in the field of crowdfunding: *“Because we don't have*

experience with funding, and we have a lot of other work. Our main business is waste management, not developing solar farms.” (P1 Interview, 2019, p.108)

4.1.3 Perspective of Project Owner P2

Project owner P2 raised 135,000EUR through crowdlending, which was part of a larger funding round including bank loans.

Similarly to P1, P2 also mentioned the motivation to engage the local community for their sustainable energy project as key reason why crowdfunding was chosen. However, this motivation was rather extrinsically triggered, since the local province government incentivized P2 for raising funds through crowdlending.

More broadly speaking, P2 sees crowdfunding especially useful as complementary source of funding in addition to bank loans. Since banks require clients to have a certain amount of own equity, crowdfunding can help to raise this required equity volume: *“If you want to finance a project, the bank says okay, you have to take 20% money from your own, and then you can get 80% financing for the project. **So crowdfunding is a very good way to collect the 20% of your own money, the equity.**” (P2 Interview, 2019, p.117)*

Role Expectation:

Contrastingly to P1, P2 regarded the crowdlending platform as a *“platform for the administration” (P2 Interview, 2019, p.114)* of the funding process.

P2 actively secured themselves local investors upfront, before then reaching out to Greencrowd to administer the process. Thus, a key function of a crowdlending platform, which is to connect projects with potential investors, became redundant in the case of P2.

4.1.4 Perspective of investors

To identify the value propositions that investors attribute to the crowdfunding ecosystem, online comments that investors left on the online project campaign page of P1 and P2 were analyzed and complemented with an in-depth interview of a long-time investor of Greencrowd. The inquiry showed that the dominant perspective amongst the investors in the P1 as well as in the P2 project was the possibility to receive attractive returns on investment through crowdfunding whilst at the same time supporting green energy projects financially: *“A good way to make money and at the same time help the environment.” (Robert, 2019).*

Further, being able to contribute to projects in the local surrounding of the investors seemed to play a role as well: “(...) *nice return contribution to a beautiful solar panel park in my own region.*” (Luc, 2019).

Role Expectation:

Greencrowd – from the perspective of investors – is expected to be a trustworthy, reliable intermediary that steers the investment process:

“to have a good feeling about what is done with your money” (II Interview, 2019, p.119)

“I trust the judgement of Jan Willem [=the founder of Greencrowd]”. (II Interview, 2019, p.120)

4.1.5 Synthesizing the ecosystem value proposition

Based on gathered data, the table below will provide an overview of identified value proposition elements and the extent to which the key ecosystem players (Greencrowd, Project Owners (here represented by P1 and P2), Investors) share the view that these elements are part of the ecosystem value proposition:

Value Proposition	Greencrowd	P1	P2	Investors
Crowdfunding as effective (re-)financing instrument for green energy projects	X	X	X	X
Crowdfunding can contribute towards Dutch energy transition	X	X	X	X
Low investment risks for investors	X			
More flexible, faster and risk-tolerant than traditional financing instruments	X		(X)	
Overcoming local resistance by engaging local citizens in projects	X	X	X	(X)
Crowdfunding offers attractive investment returns	X		(X)	X

Table 3: Overview of identified value proposition elements

Overall, the analysis showed that both project owners, the investors, as well as the platform itself, share the view that engagement of local citizens represents a major value proposition of crowdfunding, through which potential local resistance against green energy projects can be overcome. Further, all analyzed parties see crowdfunding as an effective (re-)financing instrument for sustainable energy projects that ultimately can contribute towards the Dutch energy transition.

Building on these findings, the underlying value proposition of the analyzed crowdfunding ecosystem was synthesized and defined as follows: *Green crowdfunding supports the Dutch energy transition by financing more green energy related projects and helping to win the local support of citizens.* This stated value proposition is regarded as the core construct upon which all key ecosystem players agree. Value proposition elements that are not jointly viewed as central by all three parties have deliberately been left out.

With regards to the role that Greencrowd is expected to take on, the interviews showed that the two project owners differ in their respective perception thereof: Whilst Project P1 regards the platform as manager and expert of the crowdfunding process, project P2 views Greencrowd as an administration platform. Consequently – and as will be shown in the next chapters - the way both projects utilized and collaborated with Greencrowd also differed.

Similar to Project P1, investors predominantly view Greencrowd as manager of the overall crowdfunding process. Yet due to their different position within the crowdfunding ecosystem they place greater emphasis on trust-related aspects.

4.2 Analyzing joint value creation within Greencrowd's ecosystem

The following analysis is tailored to the second sub-research question “*Which actors, activities, positions and links are necessary for realizing the ecosystem value proposition?*”, and seeks to deliver insights by first mapping the ecosystem before then analyzing associated interplay that contributes towards joint value creation.

4.2.1 Mapping Greencrowd's ecosystem

Due to the rather complex and interconnected relations within the crowdfunding ecosystem, the author attempted to answer the second sub-research question by visually mapping actors, activities, positions and links, which - through their collective interplay - allow the ecosystem value proposition to materialize. The map has been constructed based on the insights gained through the interview with platform Greencrowd as well as project owners P1 and P2, and is depicted below:

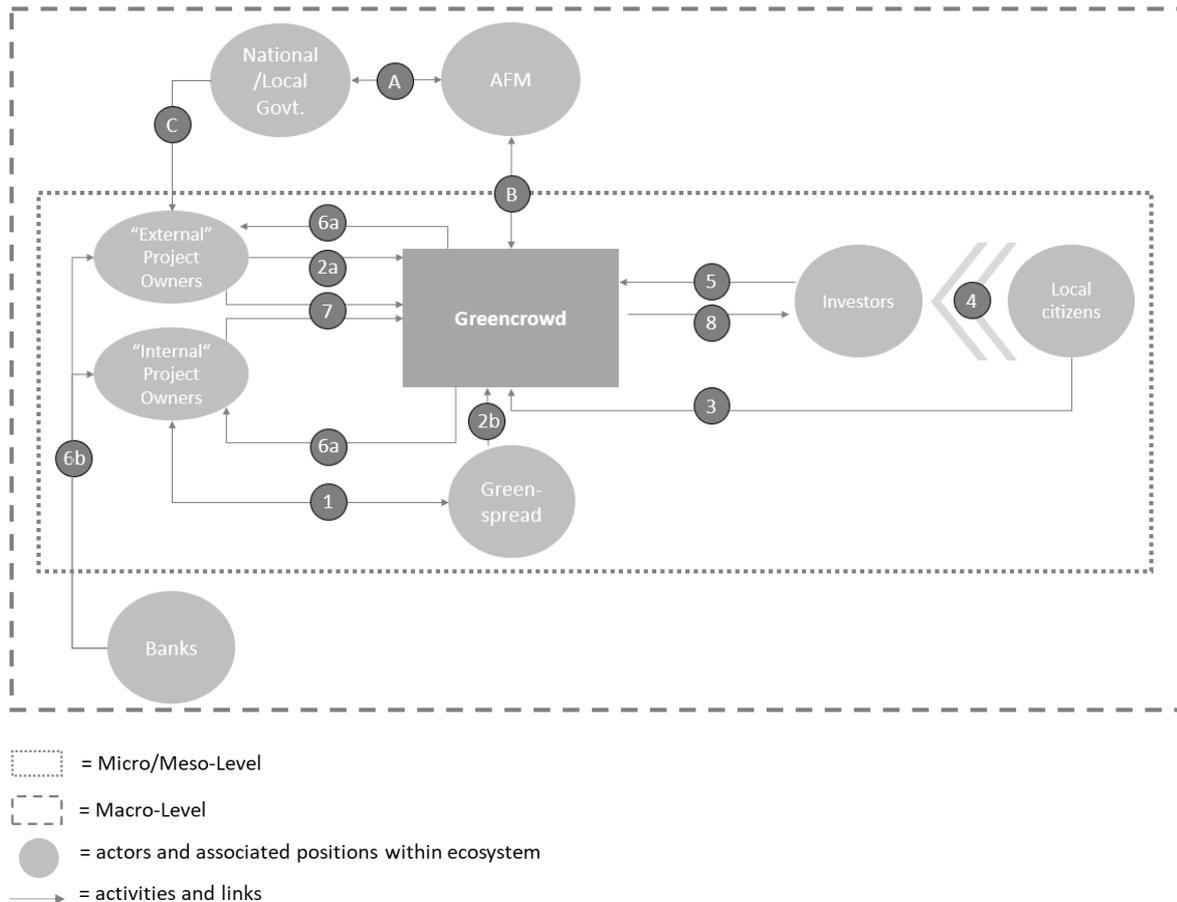


Figure 4: Business Ecosystem Map Greencrowd

Explanation of visual mapping:

1: Greenspread in its function as an energy consultancy company is collaborating with firms to help them develop green energy projects.

2a: External Project owners apply for funding on the website of the crowdfunding platform. Once they pass the selection process they get admitted to the platform and can host their campaign there.

2b: Greenspread is providing Greencrowd with selected clients/projects (=internal project owners) that are in need of funding.

3: Local citizens visit the website and inform themselves about available projects.

4: If interested, they register as investors.

5: Having registered, citizens can start investing money into projects.

6a: The crowdfunding platform is collecting all the money of investors in a special vehicle construct. Once the minimum investment amount is reached, the funds are forwarded collectively to external/internal Project Owners.

6b: In addition to financing via crowdfunding, Project Owners (at least in the case of P1 and P2) often receive additional funds through bank loans.

7: Depending on the contractual agreement, project owners are repaying investment amount plus interest rate back to the crowdfunding platform/special vehicle.

8: The crowdfunding platform is forwarding the money to investors.

A: AFM as national institution which acts as financial services regulatory authority and is controlled by the Dutch government.

B: AFM regulates the crowdfunding industry in the Netherlands. However, it can be characterized as being a two-sided relationship. Due to crowdfunding being a relatively new market, regulations are adjusted continuously based on feedback of crowdfunding platforms.

C: National government is seeking to promote sustainable development within the Netherlands by offering subsidies such as the SDE+ , which specifically aim at promoting sustainable energy production. P1 profited from the SDE+ subsidy, whilst P2's application for the subsidy had been rejected. Instead, they received subsidies from the local province government.

4.2.2 Analysis

The mapping of involved ecosystem players reveals, that achieving the overarching value proposition requires more than just the successful alignment of investors and project owners through the platform. Instead, public institutions such as national and local government, the regulatory authority AFM, as well as financial institutions such as banks play a crucial role in order for the value proposition to materialize.

To account for this, above map has distinguished between two ecosystem levels: Micro/Meso and Macro-Level. Whilst the Micro-/Meso-environment encompasses ecosystem actors that are directly linked with and steered through the crowdfunding platform, the macro-environment accounts for players that are either not directly linked to the platform or are independent of it.

It becomes further apparent, that despite its central position within the overall ecosystem and taking on the role as ecosystem leader, Greencrowd nevertheless is dependent on processes that are outside its control. Examples are for instance the subsidies provided by the national and local government, which in the case of P2 acted as main motivation to consider crowdfunding in the first place.

Banks represent another pivotal player within the analyzed ecosystem. Both project owners that had been interviewed stressed, that the crowdfunded amount only acted as a complementary in addition to bank loans, or, in the case of P1, was even utilized to refinance a part of previously received loans.

Similar to the subsidy process, Greencrowd does not have direct control over the provision of bank loans to project owners, nevertheless, it represents an important contribution to the value proposition, since project owners would not be able to develop their green energy projects without receiving bank loans in addition to crowdfunding.

Overall this shows that Greencrowd – despite positioning itself as ecosystem leader – would not be able to achieve the intended value proposition without the necessary institutional support from governmental as well as financial organizations.

Nonetheless, these findings shouldn't diminish the decisive role that Greencrowd plays for accomplishing the overall value proposition by providing the necessary alignment structure which brings together the core ecosystem players on the micro-level, namely project owners as well as local citizens/investors.

How Greencrowd is organizing this alignment structure based on platform governance and design mechanisms will be discussed in the next chapter.

4.3 Platform Governance and Design

As chapter 4.2. has shown, the value proposition that Greencrowd seeks to bring forward is contingent upon a complex interplay of multiple actors and activities. To steer and enable joint value creation, the literature review of this thesis had identified platform governance and design as key mechanisms how Greencrowd can align and structure the overall ecosystem in their favour. Sub-research question three was accordingly phrased as follows:

“What are the governance and design mechanisms employed by the crowdfunding platform to achieve ecosystem alignment?”

Drawing on the framework that was developed in chapter 2.7 of this thesis, the following will analyze how Greencrowd is approaching ecosystem alignment through these mechanisms:

4.3.1 Architecture of participation

The two key stakeholders that are encouraged to participate on Greencrowd’s platform are investors as well as project owners. Given their contrasting positions within the ecosystem, Greencrowd employs differing participatory instruments for both parties:

a. Investors

Generally speaking, everyone can register as investor on Greencrowd’s platform, as long as they are a legal or natural person and are at least 18 years of age.

To attract a high number of investors on the platform, Greencrowd makes it easy to participate by having low minimum investment amounts (specific minimum investment amount is dependent on the respective project), as well as neither registration costs for becoming a crowd funder nor transaction costs for investing funds.

This strategy is complemented by offering above-market interest rates for the crowdfunding projects, which should act as additional monetary incentive for citizens to get involved as investor.

b. Project owners

In Greencrowd's case, the acquisition process of winning new green energy projects for the platform deviates from standard industry practice. As outlined before, Greencrowd is strongly intertwined with the energy consultancy company Greenspread. According to the interview with Greencrowd, two out of three crowdfunding projects have been previous clients of the consultancy firm. This consequently facilitates the acquisition process significantly. Due to the focus on these internally forwarded projects, Greencrowd employs a rather closed participatory architecture for external projects that seek access to funding. Applying projects have to undergo a strict selection process – as will be shown in the next section – and face placement costs for collaborating with Greencrowd (100 EUR One-time payment, plus 3% of Funding amount with a minimum of 1,500 EUR to cover expenses for due diligence as well as write-up of the information memorandum).

Overall, one can deduct that Greencrowd constructed the participatory architecture in favor of investors, attempting to make it effortless for them to get involved on the platform and invest in green energy projects. This can be explained by considering the value proposition that Greencrowd seeks to achieve. Since the emphasis is on winning local support by turning local citizens into investors, the platform architecture needs to make sure that there are as little barriers as possible for citizens to access the platform, register and eventually invest money. Project owners on the other hand, face higher barriers to being able to publish their campaign on the platform. This is owing to Greencrowd's ample internal supply with suitable projects that are being forwarded from Greenspread, thus allowing the platform to be more selective when it comes to external projects that apply for funding.

4.3.2 Evaluative Infrastructure

Greencrowd views green energy ventures as “*trust project*” (Greencrowd Interview, 2019, p.101), which “*has to prove itself for the long-term*” (*ibid*). Building on this perception, the Dutch platform has implemented a rigid evaluative infrastructure, which intends to create trust among investors, by having a strict selection process as well as being highly transparent about the offered projects.

Selection Process:

The majority of hosted projects are forwarded in-house through Greenspread and thus have been screened extensively beforehand. However, external projects undergo a rather strict selection procedure. The evaluation is based on the financial risks associated with the business case as well as the fit of the project type.

Project Type Fit: A project must primarily relate to a proven, fully developed technology in sustainable energy (such as sun, wind, water or biomass, whilst at the same time representing no innovation activities). Further, a minimum of 30% of the total funding amount must be provided by investors from the immediate vicinity of the project.

Quantitative Financial risk evaluation: Key assessment criteria which Greencrowd is applying is the so-called Debt-Service-Coverage-Ratio (DSCR). The DSCR is a financial metric, which is reflecting a project's ability to cover current debt obligations through generated cash flows (Scannella, 2012). Further quantitative factors are for instance the creditworthiness score which is provided through the credit reference agency Creditsafe Netherlands B.V., or the amount of collateral or similar guarantees provided by the project owners.

Based on these quantitative factors, Greencrowd ranks projects with a score ranging from A (Best possible score, very low default risk) to F (Worst possible score, very high default risk). Only projects that are evaluated with a risk score of A or B pass the quantitative risk assessment test. Projects with a lower score – C up to and including F - are rejected. As a result, only one out of three externally applying projects pass the selection hurdle. By employing such a restrictive evaluation, Greencrowd ensures high quality standards for hosted projects, ultimately contributing to boosting investors' trust and intending to reduce financial risks.

Transparency:

For every project that is hosted on Greencrowd's platform, investors are provided with an in-depth information memorandum that contains an introduction of the project itself, details about the employed energy technology, the intended funding structure, a financial forecast, as well as an explanation of possible general investment risks. The information

memorandum is publicly accessible via Greencrowd's website. A summary of the information memorandum can further be found directly in the campaign page on Greencrowd's website. Overall, this transparent information policy of Greencrowd aims to support decision-making of potential investors and reduce perceived risks and uncertainties associated with the crowdfunding process.

4.3.3 Interface Design and Communication

Greencrowd's online website acts as main interface for the exchange of information between investors and project owners (for an in-depth description of how this interface is structured, see Appendix I). Greencrowd has constructed the interface in a manner that allows it to bundle all relevant processes for the two parties on the website: Project owners, for instance, can directly apply for funding online, and website visitors have direct access to all crowdfunding campaigns and relevant information.

The Dutch platform is eager to collaborate constructively with both parties, however stresses that final decision-making is with Greencrowd, i.e. when it comes to publishing content for the crowdfunding campaigns: *"we decide if it's acceptable and confirmative"* (Greencrowd Interview, 2019, p.100).

Further, Greencrowd is preventing all direct communication between investors and project owners, viewing it as *"not desirable"* (Greencrowd Interview, 2019, p.99), underlining that *"Greencrowd is always in between"* (ibid). This thesis argues that this is reflective of Greencrowd's attempt to impose a strong gatekeeping function, which will be discussed in greater detail in the next chapter.

Interestingly, despite seeking to be in control of all crowdfunding-related processes, Greencrowd also emphasizes, that especially project owners are ultimately responsible for the success of their campaigns themselves:

"It's not that you call Greencrowd and then sit back and wait until the project runs full. But it requires effort and they have to themselves make buzz in the newspaper and social media." (Greencrowd Interview, 2019, p.99).

This attitude can be interpreted as a result of Greencrowd being less dependent on external projects, thus having no extra incentive to promote these projects through marketing activities:

*“Because well, very bluntly, if the [] Project didn't get their money quickly it would be **more their problem than our problem**. But if we would have to earn our money only with successful crowdfunding, then of course, we would have an extra incentive to do more marketing for it.” (Greencrowd Interview, 2019, p.100).*

4.3.4 Governance structure

In general, Greencrowd takes on the role of an ecosystem leader to shape ecosystem alignment and achieve the overarching value proposition. Leveraging on its platform architecture, Greencrowd established a centralized governance style with clearly defined rules, which generally leaves final decision-making to the crowdfunding platform.

This can be seen as a result of Greencrowd's attempt to instill trust into the overall ecosystem, making sure that as many crowdfunding-related processes as possible are guided through the platform in order to maintain close control.

However, it is further observable that brand image concerns and a sense of ownership for hosted projects play a role in this governance setup as well:

“We care about the name of it [=the platform], its image.” (Greencrowd Interview, 2019, p.104)

“We are responsible in the end for it [=the crowdfunding campaign].” (Greencrowd Interview, 2019, p.100)

Employing a rigid governance style thus can also be interpreted as a measure to avoid reputation risks that might not only affect the platform itself, but due to the connectedness with Greenspread could also reflect negatively on the latter.

Before, during and after fundraising, Greencrowd is the intermediary between investors and project owners. As pointed out before, the platform is however not attempting to directly

connect investors and project owners, which again underlines Greencrowd's strong gatekeeping function. Interestingly, the interviewed investor as well as the project owners stressed that direct communication was not in their interest either:

"No, I trust the judgement of Jan Willem. I have no time for investigating many details of the projects" (II Interview, 2019, p.120)

"Yes." (Reply by P1 Project Manager when being asked if communication with investors was left on purpose to Greencrowd; *(P1 Interview, 2019, p.109)*)

Despite its controlling governance structure, Greencrowd is still seeking to make sure that collaboration processes with project owners are open enough for them to contribute with own input:

"But we are open for suggestions and own input of course." *(Greencrowd Interview, 2019, p.100)*

Further, the overall alignment structure still seems sufficiently flexible to accommodate the different needs and role expectations of project owners. For instance, in the case of P1, the project manager had the expectation that Greencrowd should act as manager and expert of the crowdfunding process:

"Greencrowd did all the job. Because we don't have experience with funding." *(P1 Interview, 2019, p.108)*

"It costs us (...) a little bit more, but we don't have work for the funding itself." *(P1 Interview, 2019, p.108)*

Consequently, Greencrowd administered most parts of the crowdfunding process, i.e. supporting with the structuring of the loan and tranches, utilizing own social media channels to promote the project or handling the payment administration.

Conversely, project P2 had different requirements and expectations regarding the role that Greencrowd is supposed to play: Having collected all necessary investors by utilizing own social ties, and having defined a loan and tranches structure upfront, the project manager viewed Greencrowd merely as *"platform for the administration"* *(P2 Interview, 2019,*

p.114). Thus, several activities that Greencrowd had to fulfill in P1's case, became obsolete for project P2, making a change in the collaboration process necessary.

This shows that despite imposing a centralized and controlling governance style, Greencrowd still manages to keep overall alignment structure flexible enough to adapt to the respective requirements of the project owners.

4.3.5 Competitive strategy

Being closely organizationally intertwined with Greenspread and acting as extension of the latter's service portfolio, Greencrowd is not voicing ambitions to further grow their business with external projects in the foreseeable future:

“So the focus will stay on Greenspread projects themselves, and under the set of conditions other parties can make use of the platform.” (Greencrowd Interview, 2019, p.103)

Due to their organizational setup, Greencrowd is further not regarding themselves as being in direct competition with other platforms in the market:

*“Because well there is not so many competitors in the way that our whole meaning with our platform is **quite apart, quite unique** compared to Duurzaam Investeren which is also aiming for Green projects, OnePlanetCrowd, they are also in the same market, in the same target group of projects. But still their crowdfunding is a goal in itself, they are the platform and they want to market the platform and **we don't really care about the marketing of the platform.** (Greencrowd Interview, 2019, p.104)*

Thus, since their platform is not operating on a stand-alone-basis, Greencrowd is not seeking to enter into direct competition with other platforms, seeing themselves as a unique construct that is not as exposed to competitive dynamics as other crowdfunding platforms.

4.3.6 Summary of Greencrowd's Platform Governance and Design

Overall, the previous analysis illustrates how Greencrowd is seeking to achieve ecosystem alignment based on governance and design mechanisms, which are summarized in the table below. How these identified mechanisms relate to the ecosystem value proposition, and what overall conclusions can be drawn from the conducted case study analysis of Greencrowd will be discussed in the next chapter.

Dimension	Mechanisms employed	Description	Exemplary Quotes
Architecture of Participation	<ul style="list-style-type: none"> - <i>Platform Boundary Resources</i> - <i>Platform Openness</i> - <i>Platform Accessibility</i> - <i>External Relationship Management</i> 	<p>Platform itself is accessible for everyone through the internet. Very few restrictions for becoming an investor. Yet strict screening process for project owners before being admitted to the platform. Geographical focus on Netherlands. Majority of projects are forwarded “in-house” from Greenspread.</p>	<p>“So the focus will stay on Greenspread projects themselves, and under the set of conditions other parties can make use of the platform.”</p> <p>“Two out of three [projects] come from our own work floor.”</p>
Evaluative Infrastructure	<ul style="list-style-type: none"> - <i>Platform Transparency</i> - <i>Input Control/Gatekeeping</i> - <i>Output Control</i> - <i>Trust & Perceived Risks</i> 	<p>Strict screening process for green energy projects as key instrument to foster investor trust. Highly transparent display of financial risks of respective projects. Description of crowdfunding campaigns on website is typically developed collaboratively with project owners.</p>	<p>“(…) the importance for Greencrowd is that no defaults will happen and so we have to screen the business cases very intensively”</p> <p>“So, the goal is just to give crowd funders an actual true and honest insight in the projects and its risks”</p>
Interface Design & Communication	<ul style="list-style-type: none"> - <i>Interface Design</i> - <i>Core Interaction</i> 	<p>The online website serves as interface for steering communication processes and information exchange between involved parties. Due to controlling governance style, direct communication between investors and project owners is prevented. Greencrowd offers auxiliary services for project owners (i.e. marketing), however sees main responsibility with the project owners themselves.</p>	<p>“(…) in the communication, Greencrowd is always in between [the investors and the project owners]”</p> <p>“It’s not that you call Greencrowd and then sit back and wait until the project runs full. “</p>

Governance structure	<ul style="list-style-type: none"> - <i>Leadership</i> - <i>Ownership</i> - <i>Platform Rules</i> - <i>Decision Rights</i> 	<p>Greencrowd takes on the role of an ecosystem leader. The firm employs a centralized governance style, attempting to guide all processes and activities through their platform. Platform rules are clearly defined, final decision-making lies with Greencrowd. Overall structure is however still kept flexible enough to accommodate the differing needs and expectations of project owners.</p>	<p><i>“we only want to be a platform where the demand and supply for financing in green energy can meet each other”</i></p> <p><i>“we decide if it [=content of online campaigns] is acceptable and confirmative”</i></p>
Competitive Strategy	<ul style="list-style-type: none"> - <i>Platform Competitiveness</i> - <i>Platform Growth</i> 	<p>Due to being closely organizationally intertwined with Greenspread, Greencrowd is less dependent on acquiring new projects externally, thus little incentive to actively compete against other platforms in the market. Future growth ambitions are currently limited, since Greencrowd mostly serves as a complementary vehicle to Greenspread’s offerings and organizational focus will remain on further growing Greenspread.</p>	<p><i>“(…) our whole meaning with our platform is quite apart, quite unique (…)”</i></p> <p><i>“Still we want to basically only look to ourselves.”</i></p> <p><i>“We care more about projects from Greenspread, that is our focus.”</i></p>

Table 4: Overview of Platform Governance & Design Mechanisms utilized by Greencrowd

5. Discussion of Findings

Utilizing the findings of the previous chapter as point of departure, this section interprets and discusses these insights from a Business Ecosystem as well as an MLP-perspective. The combination of both theoretical constructs allows to locate the findings concerning Greencrowd's ecosystem within the larger context of sustainability transition management theory and thereby provides new insights for answering the research question of this thesis.

5.1 Discussion of Findings from a Business Ecosystem Perspective

As chapter 4.1 has shown, the value proposition that underlies Greencrowd's ecosystem can be synthesized as follows: *Green crowdfunding supports the Dutch energy transition by financing more green energy related projects and helping to win the local support of citizens.*

The intentions of Greencrowd are twofold: First, it seeks to allocate more financial resources to green entrepreneurs, thereby contributing towards alleviating the existing funding gap for a sustainability transition within the energy sector. Second, the Dutch firm attempts to win local support of citizens by involving them financially into green energy projects. This is resting on the assumption that perceptions of citizens can be positively altered by providing them with the possibility to financially participate and profit from green energy ventures.

In order to accomplish this, a complex interplay of different ecosystem actors and activities is necessary, as was visualized through the ecosystem map in chapter 4.2.

To achieve joint value creation, Greencrowd positions itself as ecosystem leader, implementing an alignment structure that builds on platform design and governance principles.

Following Adner's *ecosystem-as-structure* approach, this thesis interprets the alignment structure as result of the value proposition that is sought to be achieved.

Evidence thereof can indeed be found in Greencrowd's case:

In order for the value proposition to materialize, Greencrowd is on the one hand side dependent on being able to secure itself enough green energy projects to host on its website. Vice versa, the Dutch firm is reliant on attracting a sufficient number of local citizens onto the platform and ensuing convert them into investors.

However, due to its organizational interconnectedness with Greenspread, Greencrowd is being provided with ample internal supply of sustainable investment projects. This leaves the platform in the comfortable position of not having to worry about attracting external projects. Therefore, the main concern of Greencrowd is to attract and convert as many local citizens as possible on the platform, to achieve the overall value proposition. This is greatly affecting its governance and design choices, as will be illustrated below:

Participatory Architecture is showcasing that barriers for citizens to access, register and use the platform are kept at a minimum. Further, the *evaluative infrastructure* seeks to assure that possible risks for investors are low by conducting in-depth screening processes that external projects have to undergo. Since Greencrowd intends to attract as many local investors as possible, it further requires that crowdfunding campaigns raise a minimum of 30% of total investment amount from crowdfunders that live in the immediate vicinity of the project's location. To further boost trust in the platform and mitigate perceived risks, Greencrowd's *interface design & communication* is assuring that all investment-related project info is conveyed in a detailed and transparent manner to investors on its website.

Greencrowd's attempt to instill investors' trust and minimize risks is also reflected in its *governance* style which can be characterized as being highly centralized and controlling. Yet it should be added here, that not only trust concerns seem to play a role in Greencrowd's approach to governing the ecosystem, but also considerations of the own brand image of the platform, which then again is linked back to Greenspread. This means, that for instance the default of a crowdfunding campaign might not only undermine Greencrowd's own reputation, but – due to being closely organizationally intertwined – also could reflect unfavorably on Greenspread as well. Hence one could argue that by imposing a strong gatekeeping function on the overall ecosystem, aiming to being in charge of most crowdfunding related processes, Greencrowd is effectively not only seeking to instill trust into the overall ecosystem but is also acting in a selfish manner, attempting to secure and promote its own as well as Greenspread's brand image.

In this respect it would be interesting to analyze whether Greencrowd's governance style would differ, if there was no relation with Greenspread, which potentially might reduce brand image concerns.

The analysis has further shown that Greencrowd – despite positioning itself as ecosystem leader – is dependent on actors that are outside its immediate environment to realize joint value creation. For instance, in the case of the projects P1 and P2, crowdfunding is only used as a smaller complementary funding instrument in addition to bank loans or public subsidies such as the SDE+. To fully understand the potential that crowdfunding bears for a sustainability transition, the findings of this thesis therefore indicate that it is crucial to extend the unit of analysis beyond the level of the platform as intermediary between project owners and investors. In that regard the undertaken business ecosystem as structure approach has proven useful for unraveling how Greencrowd is operating on a micro level, however, this thesis argues that to holistically understand the contribution of crowdfunding for a sustainability transition, it needs to be complemented with a macro-level angle. To accomplish this, the following section will contextualize previous findings within the MLP-framework and attempt to reinterpret them accordingly.

5.2 Discussion of findings from an MLP-stance

The MLP-framework suggests that transitions occur through the interplay on the niche, regime and landscape level. To better understand the role that crowdfunding platforms potentially can play within that context, it seems advantageous to first rearrange the ecosystem map – which was introduced in section 4.2.1 and depicted the specific actors, activities, links and positions that constitute Greencrowd's ecosystem and contribute towards the overarching value proposition - based on the MLP-logic.

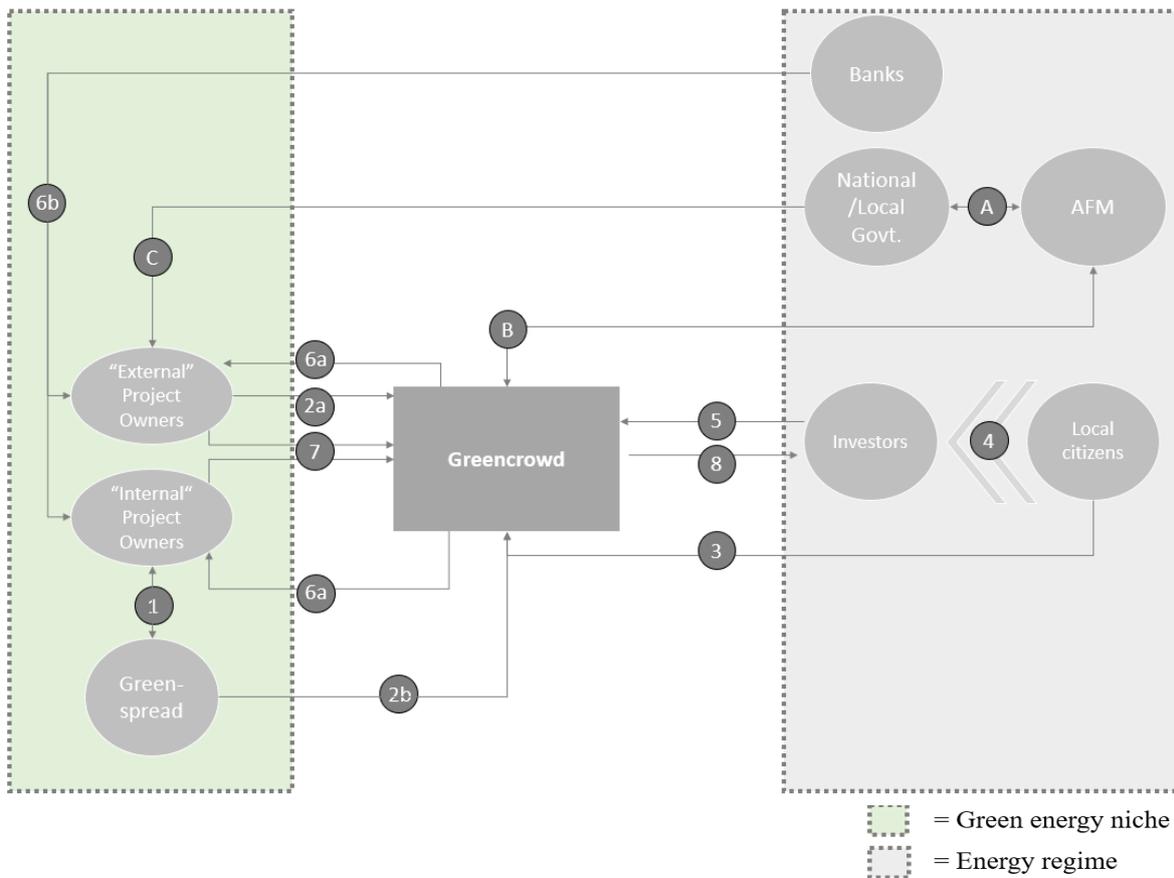


Figure 5: Visualization of Greencrowd's role from an MLP-stance

Due to their local geographical focus, relative vulnerability and exclusive dedication to green energy innovations, project owners as well as Greenspread are interpreted to be niche level actors. Financial institutions, political players such as the AFM and national/local governments as well as local citizens/investors are all construed as regime level entities, due to close links with the mainstream energy market, along with their stable and powerful positions.

The crowdfunding platform itself is however interpreted as being situated between niche and regime level, taking on an intermediary function and actively linking both levels by coordinating a joint value creation.

The general importance of such intermediaries for a sustainability transition has been pointed out by more recent research within the MLP-field, referring to them as *transition*

intermediaries (Gliedt et al., 2018; Kivimaa, Boon et al., 2019; Kivimaa, Hyysalo et al., 2019).

The role assigned to them is two-fold:

Firstly, Kivimaa (2014) argues that transition intermediaries contribute towards internal development of green energy niches by taking on the following functions: *Articulation of visions and expectations* (such as joint strategy building or the advancement of sustainability goals), *building of social networks* (i.e. configuration and alignment of interests, management of financial resources) as well as *the implementation of learning processes and their exploration at multiple dimensions* (for instance gathering and processing of knowledge, education and training).

Secondly, by being positioned between regime and niche level, intermediaries can help the latter to access potential supporters from the regime level, and vice versa (Hargreaves et al., 2013; Kivimaa, Boon et al., 2019).

Ultimately this can then result in creating sufficient momentum for niches to disrupt incumbent socio-technical regimes (Kivimaa, Boon et al., 2019).

To analyze the extent to which Greencrowd can be seen as a transition intermediary from an MLP-perspective, this thesis refers to the three functions introduced by Kivimaa (2014):

Articulation of visions and expectations: By hosting crowdfunding projects as well as a detailed campaign description on its website, Greencrowd is essentially helping green entrepreneurs to articulate their vision to a larger audience. Through its screening process, Greencrowd is further making sure, that hosted projects match with its own vision, consequently delivering a consistent value proposition to investors. By offering manifold green projects with a joint vision on its platform, one can argue that Greencrowd is effectively aggregating individual niche entrepreneurs to a “global niche” (Schot and Geels, 2008, p. 543), thereby increasing the clout that this green niche possesses. This is further boosted through auxiliary marketing services that Greencrowd is offering to promote crowdfunding campaigns. Overall, this thesis argues that Greencrowd is fulfilling the first function put forward by Kivimaa and thereby contributes towards niche building.

Also in terms of the second function, *building of social networks*, the findings suggest that Greencrowd is putting effort into fulfilling this role. Having collected a rather large investor

pool of crowdfunders over the years, Greencrowd is providing green projects with access to this investor base, thus drawing upon its own social network to support its project clients and help them fund their green innovations. Even more importantly, Greencrowd is providing the necessary alignment structure to link niche entrepreneurs with regime investors, thereby forming a boundary spanning ecosystem that connects both levels with each other (see illustration below). In doing so, Greencrowd is facilitating the diffusion of niche innovations within the incumbent regime and actively contributes towards overcoming societal resistance such as e.g. the NIMBY-movement, that forms due to the locked-in nature of regimes.

Increasing structuration
of activities in local practices

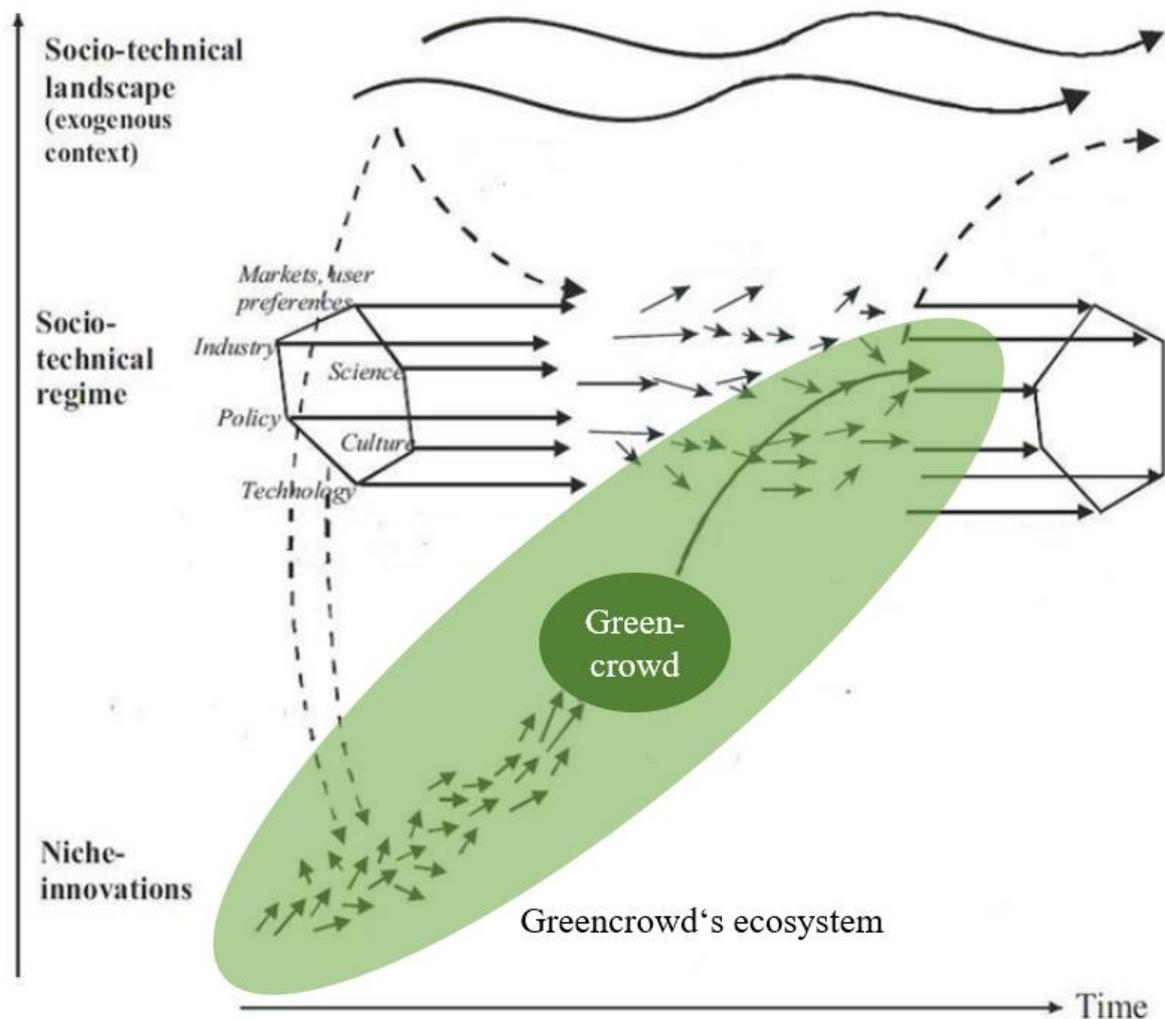


Figure 6: Contextualization of Greencrowd's ecosystem within MLP-Framework, adapted from Geels, 2011, p.28

However, one needs to stress that Greencrowd's strong links to the regime level are limited to local citizens/investors. Banks as well as national/local government as crucial regime actors and contributors to the overall value proposition are not directly connected to the platform. This consequently weakens the role of Greencrowd as transition intermediary.

With regards to the third function *implementation of learning processes and their exploration at multiple dimensions* the author of this thesis argues, that only little evidence thereof can be found in the case of Greencrowd. Owing to its centralized and controlling governance structure, Greencrowd is preventing direct contact of investors with green entrepreneurs. However, this would represent a valuable learning instrument for the latter, allowing them to receive prompt feedback on its projects and possible improvements for the future. Further, Greencrowd does not seem to actively encourage the exchange of knowledge between project owners, which would have been another key measure to stimulate learning within the niche (Gliedt et al., 2018; Schot and Geels, 2008).

To conclude the discussion of findings from an MLP-perspective, this thesis presented support that the green crowdfunding platform is fulfilling two out three key functions – namely articulation of visions and expectations, as well as network building - that can be associated with such actors. In doing so, Greencrowd is not only contributing to internal niche development, but, due to its boundary-spanning ecosystem which transcends the niche and regime level, is further promoting niche access to the incumbent energy regime. Therefore, it is argued, that Greencrowd can be indeed conceptualized as transition intermediary. Nevertheless, as mentioned previously, the value proposition that Greencrowd is attempting to bring forward is largely contingent upon the support of regime actors that are not directly associated with the platform, a circumstance that potentially undermines its position as transition intermediary. Possible implications thereof will be addressed in chapter 6.3.

6. Conclusion

6.1 Summary

This thesis set out to by seeking to understand how green crowdfunding platforms can accelerate a sustainability transition within the energy regime. Through the conducted literature review it became however increasingly apparent, that this research scope requires a dualistic approach: Whilst the transition management literature – and more specifically the MLP-field – seemed to provide a valuable theoretical frame for understanding the precursors and functioning of how sustainability transitions can come about, it appeared too abstract to allow for a sound analysis of particular actors and their potential contributions to such transitions. This was however deemed critical, since the research question focused on one particular actor, namely the crowdfunding platform. To overcome this, the paper therefore complemented the MLP-framework with a second main theorization: Business Ecosystems. Drawing on this second research stream, crowdfunding platforms were conceptualized as ecosystem leaders, interpreting ecosystem value proposition as well as underlying alignment structure as main levers to achieve joint value creation. This then allowed to systematically analyse the case study of the Dutch platform Greencrowd. Findings showed that green crowdfunding not only helps to raise funding for sustainable ventures, but even more importantly raises societal awareness and acceptance. The case of Greencrowd further demonstrated that achieving such a value proposition requires a complex interplay of involved actors, and that the platform as ecosystem leader relies on a set of governance and design mechanisms to steer joint value creation. To understand the meaning that these findings imply for a sustainability transition, chapter 5.2. located them within the MLP-framework. Interpreting previous findings from this systemic angle showed, that Greencrowd can be viewed as being a transition intermediary (see Table 5 below), fostering system transformations through niche development (by raising funding) as well as providing the niche entrepreneurs with access to the regime level (by spanning an ecosystem that connects both levels). The case of Greencrowd has however also shown, that despite its strong position, the overall potential of green crowdfunding is to a large share dependent on influential regime actors such as political and financial institutions, which are however outside the direct control of the platform itself. Therefore, this thesis concludes that in their role as ecosystem leader/transition intermediary, green crowdfunding platforms possess

fruitful potential to foster a sustainability transition. Yet, to fully exploit this potential, strong relationships with financial as well as political institutions seem necessary.

	Business Ecosystem	MLP
Conceptualized role of green crowdfunding platform	Keystone / Ecosystem leader	Transition Intermediary
Function	Lead Ecosystem towards joint value creation	Contribute towards sustainability transition
Levers / Objects of Manipulation	Ecosystem Value Proposition; Alignment Structure (Design + Governance)	Niche Development; Niche Access to Regime Level

Table 5: Conceptualized roles of green crowdfunding platforms, based on Adner, 2017; Geels, 2004; Geels, 2011; Iansiti and Levien, 2004; Jabobides et al., 2018; Kivimaa, 2014; Walrave et al., 2018

6.2 Theoretical Implications

Academic research of crowdfunding within a sustainability context is currently still an emergent field that often follows different scopes and directions. By complementing the MLP-framework with business ecosystem literature, this thesis has shown a possible avenue how to systematically analyse the potential that green crowdfunding platforms bear for a achieving a sustainability transition. The application of Adner's structuralist business ecosystem approach to the case study of Greencrowd allowed to dive deeply into actor relationships, value proposition as well as joint value creation processes, whereas the MLP-literature then enabled to situate emerging findings within the larger sustainability context. Further, the conceptualized platform governance and design model facilitated to understand how the platform as intermediary actor is steering the surrounding ecosystem towards joint value creation. Concerning the findings, this paper argues, that green crowdfunding

platforms can be modelled as innovation intermediaries from an MLP-stance, as well as ecosystem leaders from the business ecosystem perspective. However, one clearly needs to point out, that these findings are limited to the specific case study of the platform Greencrowd, and therefore are far from being generalizable (see also chapter 6.5 limitations). In its role as innovation intermediary, the platform is not only contributing towards niche development through the provision of financial means, but also supports the access of these niches towards the regime level and thereby helps to increase societal awareness and acceptance.

6.3 Managerial Implications

Given that the number of green crowdfunding platforms is currently still very limited, insights and best practices on how to successfully run such platforms are rather rare.

This thesis argues that viewing the environment in which green crowdfunding platforms operate as a business ecosystem, significantly can help to support managerial decision-making when setting up and steering platforms. First, managers need to be clear about the value proposition that is intended to be brought forward. As the case of Greencrowd has however shown, this proposition can't be realized solely by the crowdfunding platform itself, but instead requires a complex interplay with various actors and the coordination of a diverse set of activities. Therefore, it seems advisable to first map all these interactions upon which the value proposition is contingent (see chapter 4.2.1 for an example of Greencrowd's ecosystem map). Next, managers can derive a strategy how involved actors and activities can be coordinated and steered towards achieving joint value creation. To support this, the thesis has identified the following mechanisms that can be leveraged by crowdfunding platforms: *Governance structure*, *Interface Design & Communication*, *Architecture of participation*, *Evaluative infrastructure* as well as *competitive strategy* (see chapter 2.7. for a detailed description of each dimension). The concrete configuration of each of these elements is dependent on the value proposition itself, but utilizing them as guideline is deemed as helpful basis for setting up and running a successful green crowdfunding platform.

As the analysis of Greencrowd's ecosystem has further shown, joint value creation is not only dependent on actors within the immediate environment of the platform – i.e. investors and project owners – but also on players to which Greencrowd did not maintain direct relationships, e.g. banks and political institutions. Funds raised through crowdfunding

typically served as complementary financial means for project owners, whereas bank loans prevailed as main source of capital. Given this circumstance, it appears beneficial for green crowdfunding platforms to actively partner with banks, thereby pulling them closer into their ecosystem, strengthening their position as ecosystem leader and extending the overall value proposition further. Vice versa also banks could profit from such collaborations, for instance by gaining access to innovative, technological competencies, broadening their client base or potentially improving their brand image by emphasizing the sustainability focus. One of the pioneers within this field are the Dutch banks Rabobank and ASN bank who partner with the sustainable crowdfunding platform Oneplanetcrowd. Rabobank is providing the platform with green entrepreneurs that are not looking for standard bank loans, whilst ASN bank went one step further and operates a separate crowdfunding platform jointly together with Oneplanetcrowd (OnePlanetCrowd, 2019a).

Additionally, crowdfunding platforms could seek to enter into closer relationships with public institutions as well (see also next section), since the interviews with project owners had shown that public subsidy programs had played a crucial role within their respective project funding. On their website, platform owners could for instance directly promote subsidy programs or offer personal consultation on that matter.

6.4 Policy Implications

Around the globe, effective management of sustainability transitions has become one of the top priorities of many national policy efforts. Yet, entering such a pathway has proven as strikingly challenging, given the complexity and uncertainty that is associated with governing these transitions. Adding to this, local resistance against green energy projects can be another major obstacle for governments that are eager to instigate an energy transition: Germany for instance currently struggles to overcome NIMBY-movements against their plans to install more wind parks and further boost wind energy as clean energy source. Owing to this pressure, the German government drafted a law which requires a minimum distance of 1000 meters between new turbines and residential areas. Such a restraint might soothe local upset, however at the cost of likely undermining Germany's plan to become climate neutral in the nearby future. (Christofaro, 2019)

Given these challenges, this thesis argues that green crowdfunding represents a powerful instrument in overcoming such societal resistance and at the same time mobilize funding for

green energy innovations. Yet, since green crowdfunding is still in a very premature state, the clout that it is able to develop is currently rather limited and dependent on outside support. This is where political institutions can come into play: As the case of Greencrowd has demonstrated, green entrepreneurs typically do not rely on crowdfunding as sole source of finance, but instead mix it with bank loans and public subsidies. Building on this insight, political institutions could seek to enter into closer collaborations with crowdfunding platforms. Subsidies for green innovations could i.e. be constructed in a way that incentivizes entrepreneurs to use crowdfunding as funding instrument, thereby boosting the popularity of such platforms, and providing them with more clients. National governments might even go one step further and finance entire public projects via crowdfunding. Besides the financial aspect, such civic crowdfunding projects would help to engage local citizens and overcome potential resistance by reversing a top-down process into a bottom-up one. NIMBY-movements such as in Germany might thereby effectively be prevented and deprived of their momentum.

6.5 Limitations

Regarding the limitations of this master thesis, chapter 3.5 already critically discussed possible shortcomings of the overall research construct and how they were dealt with.

Besides these general limitations, one needs to point out, that the analysed green crowdfunding platform Greencrowd potentially represents an exception from other “typical” platforms, since it is not operating on a standalone-basis, but is closely connected to the Dutch energy consultancy firm Greenspread. Hence, the chosen case study might not be the most representative for the Dutch sustainable crowdfunding industry. However, as pointed out in Chapter 3.5, the goal of this thesis was not to provide generalizable findings, but instead deep insights into a particular case. Furthermore, this thesis employed a rather restrictive sampling approach, limiting available cases to a particular geographical context (=Netherlands), a particular funding mode (=Lending) and a particular project type (=solar energy). For future studies of green crowdfunding platforms, it might therefore be interesting to follow a less limiting sampling strategy and employ a multiple case study design, which would for instance allow to compare green crowdfunding platforms with differing project focus, or even varying funding modes.

6.6 Outlook

"We cannot solve our problems with the same thinking we used when we created them."

–Albert Einstein

As touched upon in the introduction of this thesis, the world is in need of a sharp paradigm shift in order to successfully tackle the large-scale challenges that ongoing ecological as well as socio-political issues raise. As implied in the above quote of Albert Einstein, this requires to abandon well-trodden paths and foster the surge of novel, disruptive innovations and business practices.

Building on the case study of the Dutch crowdfunding platform Greencrowd, this thesis concludes, that green crowdfunding platforms possess the potential to nurture and accelerate such innovations by providing required financial means and supporting the diffusion and adoption of niche innovations within the mainstream market.

Due to the qualitative case study design of this paper, it seems interesting for future research endeavours to quantitatively evaluate this assumed potential, and to back up or disprove the findings of this thesis, by studying other green crowdfunding platforms within different contexts. Given its relevance for i.e. political institutions, especially the impact that crowdfunding can have on changing public sentiment and overcoming societal resistance seems a promising research field.

Further, this thesis employed a novel method to analyse the sustainable potential of crowdfunding platforms, by complementing the MLP-framework with the business-ecosystem research field on the actor level. Due to the synergies that arise from jointly applying both theories, it seems a fruitful approach for analysing other case studies of green crowdfunding platforms, or even when shifting the focal attention to other ecosystem players.

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Appendix A – Interview Guideline Greencrowd:

General questions:

- *What is the **mission** of Greencrowd?*
- *What is **your role** within the company?*
- *What is the **motivation** for choosing to focus exclusively on green energy projects?*
- *What is the reason why **crowdlending** was chosen as mode of financing?*
- *What is the **self-perception** of the role the platform plays in the relationship between project owner and investors?*
- *How is the platform managing the **inter-firm dependency** with project owners? (which are on the one hand side dependent on receiving funding through the*

platform, but at the same time also represent a crucial element of the business model of the platform itself)

Focus questions: Platform Governance & Design

1. Platform Governance

- *Who **owns** the platform?*
- *Who **manages** the platform? Who has (managerial) decision rights?*
- *Who **controls** processes and **sets up** regulations?*

2. Interface Design & Communication

- *How do **platform responsables and project owners/investors interact** with each other and what types of **communication channels** are being used?*
- *How can **project owners and investors interact** and what types of **communication channels** are being used?*
- *To which degree is interaction between project owners and investors **controlled/steered** by the platform? Are there **rules/guidelines** for the interaction process?*
- *Is there a reason why the website is only available in **Dutch**? If yes, what is the reason?*
- *How is information about the projects **distributed** to investors? What kind of information is shared with investors and how in-depth does it go?*

3. Architectural Design of Participation & Evaluative Infrastructure

- *To which degree can project owners **influence** (=degree of freedom) what info are published about their project and the way it is displayed (i.e. content & phrasing, pictures, design etc.)?*
- ***Input Control:** How is the quality of projects evaluated? (risk-assessment, screening process); What is the reason why the process is structured in the current way?*

- *How **transparent** would you rate the platform's evaluation process? Which role does transparency play for the platform in general?*
- *How **restrictive** is the evaluation process? (i.e. ratio of firms applying for funding and then being published on website)*
- *How is **trust** created on the platform (for investors as well as for project owners)?*

4. Competitive Strategy

- *How do future growth ambitions look like?*
- *What is your customer acquisition strategy?*
- *Where do you see yourself in comparison with other Dutch green crowdfunding platforms? Where do you want to be in the future?*

Appendix B – Interview Guideline Project Owners

General Questions about P1/P2 & the financed project

- What is the **mission** of P1/P2 as a company?
- What is **your role** within the company?
- What is the **idea** behind the [anonymized]? What are the **goals**?

Focus Questions on the Crowdfunding Process and collaboration with Greencrowd

- What was the reason why **Crowdfunding** was chosen as way of (re)financing the project?
- What were **goals** that led to choosing crowdfunding?
- What was the reason **why specifically Greencrowd** was chosen as platform?
- How did you experience the **communication process** with Greencrowd?
- Was there the possibility **to directly interact with investors**? If yes, how was the experience?
- How did you experience the **collaboration process with Greencrowd**, esp. with regards to the selection process and structuring of the loan? How **transparent** was it for you?
- What would be your **feedback** to Greencrowd? Is there anything that could be improved, esp. with regards to the website, the communication process or the collaboration?
- Would you consider doing Crowdfunding **again** in the future? Why so?

Appendix C – Interview Guideline Investors

General Questions:

- *How did you first get in touch with Crowdfunding?*
- *What is your **motivation** for participating in Crowdfunding **in general**?*
- *What is your **motivation** for participating in Crowdfunding **for sustainable energy projects in particular**?*
- *Since **when** are you investing via crowdfunding?*
- *Which platforms do you use?*
- *Why do you use these particular platforms?*
- *How was your **general experience** with crowdfunding so far?*

Experience with Greencrowd:

- *How did you experience the **registration process on the website**? Was it intuitive?*
- *What do you think about the general **design of the website and its usability**?*
- *How did you experience the **investment process**?*
- *Based on **which criteria** did you select the projects in which you invested?*
- *As how **transparent** did you experience the platform? (Especially with regards to process documentation and information about the investment projects)*

- *Did you try to get in contact with Greencrowd? If yes, how did you experience the **communication process** and which **communication channels** did you use?*

- *Would you have liked to have the option to **get in touch directly** with the managers of the investment projects? Why so?*

- *As how **trustworthy** do you perceive Greencrowd? What are **factors that influence** this perception?*

- *What would be your **feedback** to Greencrowd? Is there anything that could be **improved**, esp. with regards to the website, the communication process or the collaboration?*

Appendix D - Interview Transcription Greencrowd

Interviewee: S. (anonymized); Project Manager of Greencrowd

Interviewer: Moritz Häußler, author of this master thesis

Date of interview: 26th of April 2019

Location of interview: Headquarter of Greencrowd in Woudenberg, Netherlands

Transcriber: Moritz Häußler, author of this master thesis

List of acronyms: S = Interviewee; IN = Interviewer

IN: First of all thanks again for making time on such short notice.

S: No problem, Friday is a flexible day for everybody. Not so many people in appointments on Fridays, so no problem.

IN: To start things off, I'd like to first get more infos on Greencrowd itself and also Greenspread. So first of all, what is your role within the company?

S: My role is, as I said before, I work officially for Greenspread since 2012. And my job is Project manager actually, in the development of renewable energy projects. Mainly solar, but also heat projects, LED-lighting projects. And, actually, we work a lot for public organizations, municipalities, provinces, housing corporations. Such organizations. And actually, we started more as a consultancy company with Greenspread. And soon we wanted to add more value to our consults, by saying things like if we conclude that your project is feasible and profitable, we can also offer you financing solutions. And we are willing to put our own money in those projects. So basically, the clients we had wanted to choose for the sustainable projects, but couldn't finance it or saw too many risks. Then we jumped in, and we said okay, we finance the project for you and we make kind of a lease construction and we buy the system and you buy from us the solar power, for instance. So in that way we got ourselves into the long year exploitations of projects. 15-year long contracts with the clients as a kind of utility from the assets of our own projects. And that meant that we had to search for financing as well. And well, we know our ways at the banks, at the local funds that the provinces have for such projects. But we also thought that renewable energy requires for local support. And people from the environment of these projects. We wanted to give them an opportunity to participate. And then we thought well, two important reasons we see that such projects need local support. Talking about wind or solar, things that have an impact on the environment, so you better have the people around the project around you in your favor, so that they don't protest against it or whatsoever. and there's a financing issue to tackle. And with crowdfunding we could tackle both issues at the same time. So that's when we decided to launch - in 2012 in the summer - Greencrowd. And Greencrowd for ourselves was immediately not a goal in itself. Not a platform that has to be profitable in itself. But by running Greencrowd we wanted to be able to do more for Greenspread. To develop and finance more projects. So it is a means to the goal to let Greenspread grow. And because it is not a commercial company in itself, and it has to serve the needs of Greenspread and other people who want to make use of the platform, we also said well then it doesn't need to be a

BV as we say in the Netherlands, - a commercial organization but it can be a non-profit foundation. And the only goal why we put Greencrowd in the market is to address the two issues that I mentioned and to serve the needs of Greenspread in that way.

IN: And how did you came up with the focus on Green Energy? Why did you choose that?

S: Well that's again related to Greenspread. Because Greenspread's mission is to help the Dutch energy transition. And to help make a difference in this field by developing, financing and exploiting projects. Concrete projects, that concretely contribute to the national, international goals. In a profitable way. So we are a commercial company as Greenspread in the field of renewable energy. And that's why we also chose the sharp focus for the crowdfunding platform. We only want to be a platform where the demand and supply for financing in green energy can meet each other.

IN: And why did you decide to focus on Crowdlending as means of funding?

S: Well, because such projects, be it solar or wind or whatsoever, they always come together with a financing question and a business case that earns itself back slowly throughout the years. But always the financing hiccup is at the beginning. But the projects in itself are very profitable. If you organize them well. So, every project that can be funded via Greencrowd has a earning model in itself. And just the projects Returns on Investments they are okay, so from the cashflows of the projects there is an opportunity to pay back the people that fund your project. And in that order you can create an up-scalable model. Because when it's based on donations you can question its scalability. And with lending you can much easier also attract people to your projects. And that's what we saw as well. Because out of all our crowdfunders the half do it with a bit of a green good intention. How nice to finance the solar panels on the school of my children people think. And that's why they participate. But I think the same share of people they do it for the return on the investment. They see that nowadays at the banks the interests are very low. 1% at max. And because of the profitability of renewable energy projects, you can often offer them interest returns like 4,5 or 6% for 5-10 years propositions. So, its financially very attractive for the people. You basically share a bit of the profit from the project with people. and well that's of course an up-scalable model.

IN: And you decided against equity, which would also allow for the profit focus, why did you decide against that?

S: Well we actually can serve both. What we do for Greenspread for instance is that we also offer share of the equity need for crowdfunding. And sometimes also when it's a hybrid financing with a bank or with a fund there are also rules applied for that. That the bank does or does not want that crowdfunding is part of the financing puzzle. So, you are also bound to rules for that. But, the most of the projects that have been funded through Greencrowd are refunded equity projects actually. Without the building risk upfront. So, when the system is built, financed and it has proved it's working. We can finance a share of the equity to get back the equity to fund the next project. And that snowball effect is what we aim for.

Basically, we have one municipality, and we started with the city council house, we funded it, and then with the money we funded back, we did one street further three sport accommodations, and then we crowdfunded that again. then we did three schools, we crowdfunded that again, so it's also a snowball effect and by spending once your own money, you can actually get multiple projects in your portfolio. So that's exactly the aim why we founded Greenspread.

IN: What is the perception Greencrowd has of its own in terms of the relationship between project owners and investors. Where do you see yourselves?

S: Well, I think it's important to mention here that Greenspread is often the lender, basically. Not always, but like [anonymized] is a different construction. Because they used the platform of Greencrowd and Greenspread is not a party in the project itself. So, well we have the platform, we have the site and people know the name, we have a database of our crowdfunders. So people can use our platform. But, since again, Greencrowd is a foundation without profit, we can be quite strict upfront which projects we want to give a place on our platform and which projects we don't want to give a place. And that's why we can be quite picky in that. We can test the projects on their risks, because of course the importance for Greencrowd is that no defaults will happen and so we have to screen the business cases very intensively. We have to exclude the projects with too many risks, and well when it's about the Greenspread projects we are ourselves in control. We know all details about the projects and if it's potentially possible to crowdfund it. But with [anonymized] for instance, it's a third party which want to use our platform. Which is possible under certain conditions. Be it the profitability and well the type of project as well. In the early years we had a bit more broad scope and we also funded some step aside from renewable energy projects like Fairtrade projects. But that was all different and later we really sharpened the focus and said okay we only fund renewable energy projects from proven technologies, so no research based or development growth financing. Only project financing, with proven technologies, like solar or wind.

IN: How big would you say is the share of projects coming from outside and the ones coming from Greenspread?

S: I think it's about 60-40, 70-30 in the favor of Greenspread projects. 2 out of 3 come from our own work floor. And Greencrowd is also a standalone platform without any people on the payroll and they hire the manpower from Greenspread. and once a year they bill each other for that. So it's kind of an empty foundation.

IN: Now talking more about the platform, the way it is structured and the rules. So, first of who owns the platform?

S: Well technically there is no juridical relation between Greenspread and Greencrowd. Organization-wise there is. Greencrowd has two directors, it's Jan Willem and Gerald. And together they have all the decision power in Greencrowd. And they happen to be in the board

of Greenspread as well. But if for instance Greenspread would go bankrupt tomorrow it doesn't affect Greencrowd, and the other way around. So they are separated entities.

IN: And the two directors are also the only one that have decision rights?

S: In the board of Greencrowd, yes. It's not a corporation, or there is no members background. but the policy they execute is kind of still bound to the guidelines and rules and direction that AFM, the governmental supervisory. And for risk analysis and just the rules how much money can an individual crowd funder lend to a project. such rules come from the AFM, and the two directors will have to apply those rules in what they offer on the platform. Also, the duty of information which you publish on the website, and well, there all kind of rules that tell you what you may do and may not do as a foundation in Crowdfunding.

IN: In terms of communication on the platform itself, which channels exists for communication with investors and project owners?

S: Between for instance [anonymized] and Greencrowd? Well, often it is personal communication, e-mail, face to face meetings. Often, it's part of a project group where people just meet each other regularly. But in the daily operation it's just e-mail and telephone communication and just mutual adjustments of the daily things.

IN: But before you start the relationship with project owners you don't specify okay we only have those communication channels?

S: Well, communication channels not really but we immediately try to see if it's a feasible project. If there is a potential match. And they can also actually conclude themselves from our website if it would be possible to make use of the platform or not. And there is an intake form. And in the intake form it allows us to screen the projects ourselves. And then later on people have to provide the financial information. and then inhouse we do here the checks on the business cases and we calculate the risks in the risks model we have. And if the risk is too high, we still abort the whole plan for funding it. And also actually, Jan Willem as director always just before accepting the project he asks himself the question if he would fund it with his own private money. Based on the trust in the people, based on the trust in the numbers on the paper, based on the whole total picture. And if he is too hesitant, it still doesn't get on the website. So in every project that is online, the director is with his own personal money in. So that also is a signal for trust for the people who want to help funding it. So that's a bit of a soft criteria.

IN: Is it always the same amount that the director is investing?

S: No, it depends on a lot of things. On the funding needs, on the interest, on many things. Sometimes, the project owner wants a cap on the max what people can invest, because they are afraid that it becomes too big of a success and only few people will fund. And as the goal of the funding can be too involve as many investors as possible in the project. So, we had a project for a hospital, and we had to cap it on 1,000 Euro maximum investment, because they were afraid that two medical specialists would fund it completely, whereas the goal was to create a big crowd that would support this project. So, in the end all people chipped in for like a couple of hundred euros and we had like 80 people fund it together. So that's apart from the funding, also a process goal in itself, to spread the word of us.

IN: And you mentioned the investors, how do you communicate with the investors?

S: Well, investors have a profile on the website. They register. They have to do some tests in advance to make sure that they understand the rules of the game, let's put it like that. The risks that are involved. That they understand how we assess the risks, how we communicate to them. But it's a bit more 1-1- communication. If people have questions via e-mail, the contact form, via the telephone. But the most communication is still project related. I did not get my interest on time, or I don't understand why is it this, and was it last year differently etc. So there can be thousands different things, but it's mainly via e-mail or telephone. But on the website in their personal profile they have an overview of everything, what they paid, when they get which sum back, which projects they are invested in, so they have all the insights online basically.

IN: But can the investors get in touch directly with the project owners?

S: No, we try to prevent that. It's not desirable for Greencrowd is the middle man in that, and however they do directly meet each other in the lending contract. Because Greencrowd is not a party, when we have investors, Greencrowd and the project owners, Greencrowd collects all the crowd funders and put them in a small entity. And this small entity signs the contract with the project owner. A special vehicle. And Greencrowd itself doesn't put its signature under the lending. So, they have a formal direct juridical binding relation. But in the communication, Greencrowd is always in between.

IN: And the other way around, if project owners want to reach out to investors?

S: Well, yeah, they can make use of the database of Greenspread, of course. But, they themselves - we always say - it's largely dependent on them how big the success will be. It's not that you call Greencrowd and then sit back and wait until the project runs full. But it requires effort and they have to themselves make buzz in the newspaper and social media. Of course, we contribute to this as well. We do have a solid database of people who almost invested in all projects that we published. But still it has to come from both sides in that way. We had some projects where the project owners expected that Greencrowd would do all the work and that didn't work out in the end. But still, apart from the input it mainly depends on the proposition of course. What are the interest rates, what is the duration of the lending,

how risky is it? That are the three things that mainly decides if a project runs full within an hour or sometimes a couple of weeks. We also do have a WhatsApp group where we already pre-inform people like in two days this project will be online, so they can already read the information memorandum and see if they want to invest in it.

IN: But in this group are only the existing or previous investors?

S: Yeah. People that subscribe. And there is also a newsletter. There are more means of communication. But still the individual communication where people just call us, Greenspread picks up the phone.

IN: So, you don't offer separate marketing service for project owners as other platforms do?

S: Yeah, but I think those platforms are more dependent on the projects to succeed than we do. Because well, very bluntly, if the [anonymized] Project didn't get their money quickly it would be more their problem than our problem. But if we would have to earn our money only with successful crowdfunding, then of course, we would have an extra incentive to do more marketing for it. But of course, we still do that, because for the general image of the crowdfunding platform it is only good if it's running well and the projects are quickly funded. And to keep our crowd funders happy for the next project that we will post ourselves. So, there is of course marketing, but again, technically it is an issue of the project owner.

IN: And can they influence the information that is displayed in the project description?

S: Influence, well yes. They can ask us to write this information, we call it memorandum. They can do it themselves; we screen it of course. They can offer the input and the tools. And if they have specific wishes on how we put it online, we are willing to listen to it, but still we decide if it's acceptable and confirmative. We are responsible in the end for it. But we are open for suggestions and own input of course.

IN: Are there general guidelines for this?

S: Well, we have a certain build-up of this information document. There is the risk analysis, the information about the business case, there is example formulas to calculate the interest and the payback schedules and so on. But there is not a blueprint or whatsoever, so it's kind of flexible. And every project is also different. For the [anonymized] project for example there are other important details to mention than for another project. So, the goal is just to give crowd funders an actual true and honest insight in the projects and its risks. That is the main goal.

IN: Would you say you go beyond the regulations of the AFM in terms of how transparent you are?

S: Yeah absolutely. I think if you compare Greencrowd to other crowdfunding platforms, be it for renewable energy or not. We are the most strict I think in risk assessment. It's a conscious choice, I think because renewable energy is a trust project that has to prove itself for the long-term. So for the type of project it's absolutely very important to focus on the risk and also again, we can allow to be picky and critical, because again, we really like that [anonymized] does this project with us and it's beneficial for them, it's beneficial for us, it's beneficial for the crowd founders. But Greencrowd will still exist tomorrow if [anonymized] didn't come, because it's a foundation, lean and mean, no costs - well costs but within the non-profit oriented scope.

IN: I noticed the website is currently only in Dutch, is there a reason for this?

S: Well I think it would be a good thing to also translate it in English. But because this Crowdfunding market is really specific to the guidelines of the Netherlands and the AFM and its control and its rules that we have to apply. Our target group is also ending at the border basically. And well we actually did once a project in the Czech Republic that we funded, but there was a Dutch Project Owner and there was a Dutch company that did it basically so there was still the link. And well we are busy in Belgium to set it up as well, but so far we do not really have ambitions to make it a success outside of the borders. But there are enough people in the Netherlands who could be our target group who don't speak Dutch necessarily. So in that way it could be a good step to offer everything in English. But well for instance, it is still quite labor-intensive to also translate all information memorandum for a project, maybe for two or three funders who don't speak Dutch. But then it's again assessing the input versus the output. But just the general information on the website, yeah why not have it in English.

IN: Coming back to the risk assessment part, could you explain the process in more detail again?

S: Well we do credit check on the lending company itself to start with. Then we see how sound they are financially speaking.

IN: And I've seen online that there is an external party involved?

S: Well there is a third-party that has the information to do the credit check. We make use of a financial company that has access to this information. Because we don't have information on this ourselves. So then we check the creditability. And apart from that we have to get the project business case under our eyes. So we can assess it, and see what is the DSCR of the project, the financial capability of paying back your debtors. And that's according to our own financial knowledge and insights. And then we apply the model that we developed together with the AFM which they also certified that we can use do such a risk analysis check. So we

want information how many banking funding or other funds are involved and what are the agreements on that and what are the interest rates. And if it is about solar, we want the technical analysis of the site, we want a yield calculations, and so just to - from the perspective of the crowd funders - to assess okay how likely is it that this lender can pay the crowd funders back on time. And again, only if it is safe it will result in Score C, B or A and then it gets access to the platform.

IN: Minimum Score is B, right?

S: I think so, to be honest, last years I wasn't in the operations anymore, but there was a restructuring of this assessment way. I don't know if C is still included or not. But somewhere there between B and C is a cut.

IN: So, the model has also been adjusted over the times?

S: Yeah. It is constantly being fine-tuned. But together with the AFM. We update it. And when it's updated, we send it to them and they approve it or give their feedback. So it's constantly getting better.

IN: But it's only you and AFM that developed this risk model? No external advisories?

S: No, I think it would be good for the market to have a standard in that. But actually you see the last years that the regulations and the institutions like AFM and so on, they walk a bit behind facts. They are reactive to what they see in the market. It's not that they say upfront we see Crowdfunding coming up the coming ten years, this is your risk model, apply it. But they see the initiatives in the market emerge and then they have to control it. So they are a bit reactive to the whole development. And that's why also when we started it and we talked to them about what we can and can't do, they also came with some rules and regulations. And every time we implemented them and they had a new set again. Because they are also developing their standards constantly. It's a new market. Would save a lot of time and input and costs if upfront all such borders and regulations were set in stone. And the same for everybody. And right now you have indeed the situation that we have our own risk model and it's approved by AFM. But if you want to start a Dutch crowdfunding company tomorrow and you develop your own risk model you have a new discussion with the AFM. But we are quite transparent in how we use it and what we think is specifically relevant for renewable energy projects.

IN: And how restrictive would you say the whole process is? Maybe expressed in a ratio.

S: The projects we decline? Well, I think that half of the projects don't make it to the website. Sometimes it's because they are not our target group. Because they are not renewable energy. Or somebody that has a new technology developed that needs funding to

expand its growth for research and development. It's too risky, not proven technology. And out of the projects that are feasible by its nature - because they are solar, wind or whatsoever - then we still have to conclude sometimes that there are too many risks, or doesn't get C, B, or A rating and then it still doesn't happen. So, I think from external parties one out of three maybe makes it to the website.

IN: Are there even Projects coming from Greenspread that don't make it?

S: No from Greenspread not. Because we know in advance if it makes sense or not. So what I just said is applied for the third-party projects. And from Greenspread we still give the insights to the crowd funders and we run the risk model, we publish the results. But we know upfront already of course if it is possible or not. So that saves a lot of time.

IN: I think the whole restrictive process is one way of how to create trust. What would you say are other mechanisms to create trust on the platform?

S: Practice. If people see, today is 26th of April I should get my interest for project [anonymized], hey it's on my account. That creates trust. That they see that what we promise is really happening. And often people who then invest in one project, the majority also invests in other projects. So often with the same money. On the day when they get their pay back or their interest, they fund it again in other projects. So that is of course the biggest trust sign you can get. And well, we have a very low default rate. I actually think we have a 100%-score so far. So that also appears in the statistics of course. And you know you can actually assess from the memorandum and from the proposition if it makes sense, you know. Sometimes you see on other platforms 10% interest or whatsoever. And then you think yeah, well with such a high interest, probably the risk is also super high. And the other way around. When the risk is high you automatically have to raise your interest rates to make people enthusiastic about it. So that is not the field we want to be active in. We have a bit conservative approach in that, in a progressive market, it is a bit of a paradox, but it works well I think.

IN: In terms of your acquisition strategy for new business, in the future you want to continue focusing on the business through Greenspread, or you also want to acquire more third party projects?

S: Well there was even a while were said we only want to use it for Greenspread. But still then we again said that under the right conditions we want to be open for third-parties. But this set of criteria is only getting sharper and tighter. Because otherwise we are kind of more of a administration company for third parties. And still the things we want to put our time in that we have and our money, are our own projects that are our own assets. So the focus will stay on Greenspread projects themselves. And under the set of conditions other parties can make use of the platform.

IN: Would you say there is kind of a competition between the platforms in the Netherlands? What is your view?

S: Yeah a bit, yes. It's not shocking, I think. There are these statistics like the Top10 of the last month, there used to be a kind of company that was really a Trendwatcher in Crowdfunding, Douwenkoren. They actually stopped with it last year. But they were for years the data collector on Crowdfunding in Netherlands and they showed these graphs and they compared platforms, so yeah of course, this it was even more it was quite important because it's new and you want to prove the trust. Still we want to basically only look to ourselves. Because well there is not so many competitors in the way that our whole meaning with our platform is quite apart, quite unique compared to Duurzaam Investeren which is also aiming for Green projects, OnePlanetCrowd, they are also in the same market, in the same target group of projects, but still their crowdfunding is a goal in itself, they are the platform and they want to market the platform and we don't really care about the marketing of the platform. We care about the name of it, its image. We care more about projects from Greenspread. That is our focus.

IN: Could you imagine that might change in the future?

S: No, I think if it was to change, it would have already happened long ago. I actually see that it only gets more narrow. that the handling for the projects of third parties was so big in general that Jan Willem was in practice more busy with these projects of third-parties for the non-profitable foundation than he was busy with the profitable Greenspread projects for ourselves. So that was also a lesson to say okay well we still want to do it, we have the software, we have everything so we want that third parties can use it, but we tighten the criteria and we don't say yes to all people who call us because it creates too many handlings.

IN: Where would you see the potential of Crowdfunding in the Netherlands for contributing to a sustainability transition?

S: Well specifically to the sustainability transition I think very important. Because what you see in the market as well, in the Netherlands there is a lot of resistance against projects on the local level wind turbines in people's backyard and the whole NIMBY not in my backyard movement and so on, also against solar parks actually, there is quite a negative approach and people see it as something negative, unless they can partly be invested in it and they can also earn something with it. And then a wind turbine is very beautiful and then a solar park is a very good thing instead of something that pollutes your horizon. So in the Netherlands where space is scarce and it's really important to get the people behind you. And from that point of view, crowdfunding in renewable energy projects is essential I think. Or any way of participation, you also see all kind of different models, and that instead of crowdfunding you use your energy bill at home to participate in a project, the same thing. You'll also see that the tenders the public parties put on the market you'll be assessed on the input you put into mobilizing the neighborhood for participation. And if you don't have a good participation model you're chanceless in such tenders. And so I think that that will only increase the importance for it. And besides that, from the financing point of view it might be also of course getting more and more important. Because you see that the banks and the funds, they

can't provide the flexibility that the market demands. Quick money, maybe sometimes higher risks not enormous portfolios but on the individual project level. And then apart from crowdfunding there are not that many different options actually.

IN: Thanks very much that was the last question as well. Thanks for your time as well.

Appendix E - Interview Transcription Project P1

Interviewee: K. (anonymized); Project Manager of P1

Interviewer: Moritz Häußler, author of this master thesis

Date of interview: 25th of April 2019

Location of interview: Headquarter of P1, Netherlands

Transcriber: Moritz Häußler, author of this master thesis

List of acronyms: K = Interviewee; IN = Interviewer

IN: The first question would be related to [P1] as a company, it was founded as part of [anonymized]?

K: [P1] is a BV, as we call it in the Netherlands. It's part of [anonymized]. [Anonymized] is from eight communities here, they are the owner of [anonymized].

IN: What is the mission of [P1]?

K: The mission of [P1] is just to realize the project here. Just founded for that one project. We have also a subsidy from the government for the project, SDE plus we call it. That's why we founded the Solar BV. So the subsidy is also on the name of the Solar BV. Because [anonymized] is a public organization, we don't have a coupling between [anonymized] and P1. We made a separation.

IN: There are no future projects planned through [P1]?

K: No, for us not. There also coming three wind turbines, that's a wind park. Maybe they start building in a couple of months. But it is not our own project. Then we are just the land owner. We have a contract with a commercial developer who does the wind park. There is only one wind turbine which is very special, because that turbine comes on the landfill near the solar panels. So there is some interaction. We also get some shadow from the wind turbines on the solar panels. But we calculated with the effect of the shadow.

IN: For the [P1]-project, what was your role within this project?

K: I'm project manager for [anonymized]. So I started research in 2013 already. And when we get the subsidy as base for a good business model, we developed it further and we realized the project last year in 2018. We built from 2017 until 2018, so this year it is one year operational.

IN: What was the goal of the project itself?

K: Well the main goal is just to realize a project for sustainable energy. And to give a new use to the landfill, that was actually the second goal. Because we landfilled here waste from 1969 until 2014, then we stopped here landfilling. The landfill was full. We put a cover on the landfill. As we normally do. A layer to seal it. So the gas can't go out and the water can't go in. With a plastic liner we seal it. And then you can grow grass on it. But we choose to make a new use of the landfill and that's the solar park.

IN: Moving on to the crowdfunding process, what was the reason why you considered crowdfunding in the first place?

K: In the beginning we talked about crowdfunding to give people in our working area the opportunity to invest in our solar farm. But first we said okay, we arranged the finance for the project, we are going to build it, and the moment the project is finished and operational, then we start the crowdfunding. Then we can let the people see, okay we have a good project now it is interesting for you to do the funding. The main goal was having a project for sustainable energy, the second what I told was to give a new use to the landfill, but also for our people here in our area, who are clients of [anonymized] for the household collection. To give them the opportunity to lend money to us. But first we did the whole finance of the project with banking etc. and we lend 1 million euros from a special funding party and with that party we had the deal, okay when we are finished building you get your money we do the funding for the same amount of that money. You get your money back and then instead of you we have the crowdfunders. So we refinanced the project for that amount of money by crowdfunding. We had some discussions and proposals from three or four parties, also from Greencrowd and we discussed those proposals and in the end we chose Greencrowd, they had the best offer which matched with our feelings and our idea of crowdfunding. We started funding last year in July, July 2018. The first weeks there was only the possibility for my colleagues for the people who work for [anonymized], to participate in the funding. But we thought a lot of people want to do it, but in the end, after three weeks only six colleagues did it. Also including myself. And after that we do the funding in our working area for some months. At the end of that funding round I had about 90% of the money we wanted. And then in participation with Greencrowd we said okay, now we open the funding for the whole Netherlands. And then it was full in one day. About a million euros we funded in total. And at the end we had 340 funders. And 250 of them are living in our [anonymized] region. So yeah, and our goal was to collect the money from most people of our region. So it was successful.

IN: And how did you first come across Crowdfunding itself?

K: That was new for us. We never did Crowdfunding as [anonymized].

IN: Where did the idea come from to consider it?

K: Because we had also another third party who gave us advice throughout the whole project. An advisory, a consultant actually. That was Qing Sustainable. They had some contacts from other projects and experience with crowdfunding. So they told us to ask that party and that party for a proposal. And then we speak about who has the best papers and the best ideas. So we chose Greencrowd. It's a young business, Crowdfunding. It's like startups I guess. And when you speak with that people you see also – that is also for the PPA, the party we give the energy to – young business still active from five years maybe maximum of 10 years in this business. People are very fast changing. This week I have contact with Jan and next week there is Piet. Jan disappeared. That is my experience with that kind of business. But I hope in about 10, 15 years, because we have contracts with Greencrowd for 15 years. We have three tranches we call it, for 5 years, for 10 years and for 15 years. And actually we sold panels. Crowdfunders could buy a panel for 250 euros, for a maximum of 16 panels. So the maximum for an individual crowdfunder was 4000 euros to fund our projects. We also decided for that solution because we wanted as many funders as possible. When you don't have a limit you maybe have 2, 3 funders and then you have the total amount. That was not our goal.

IN: You mentioned the four proposals. What were the decision criterias?

K: A part of the decision is the feeling. Is that the right party for us? Do we speak the same language? Is the party not too commercial? Because as [anonymized] we are a public organization, we are not a commercial organization we look at other aspects of life, and so on. Greencrowd had the best idea about the three tranches. And also, they had a good proposal for that they do most of the work. It costs us as [anonymized] a little bit more, but we don't have work for the funding itself. Greencrowd did all the job. Because we don't have experience with funding. And we have a lot of other work. Our main business is waste management not developing solar farm.

IN: How did you in general experience the communication process with Greencrowd?

K: That was good. This kind of project was also new for Greencrowd. For us it was new. Sometimes it was searching from each other. Like okay, I expect this solution and they thought about another solution. So we had to find each other. But that's normal in a project I guess.

IN: Which communication channels did you use?

K: Most of the communication was by email. But I think the reason is that Jan Willem Zwang the CEO of Greencrowd is also a very very busy guy. It was hard to come in contact with him by phone. I'm an older project manager, sometimes I like to have a meeting just

here at the table, to see each other in the eyes and talk about it. And yeah, there is no time for that kind of meetings in this world. Via Skype, Telephone, via Email, via WhatsApp. That was a new situation for me. Because I work a little bit different. But I think that's for all the other crowdfunders the same.

IN: Was there also the possibility to interact directly with the investors?

K: We didn't have any contact with the investors. All between Greencrowd.

IN: That was on purpose because you wanted to leave this process to Greencrowd?

K: Yes. Also, now at this moment, this year it is the first time that we had to pay to Greencrowd. And Greencrowd pays to the funders. We don't directly pay to the funders. We just transfer the money to Greencrowd. And they send it to the investors. I have a list of all the funders but I'm the only one here in our organization who has that list. That was necessary to see okay, who on the list are my colleagues, who on the list lives in our area and who is on the list that lives outside of our area, in the rest of the Netherlands, and even abroad. I think the people from abroad who are funders are people from Dutch origin. I can see that based on their names.

IN: When you applied for the loan, how did you experience this process of applying for it and then the selection process, was it transparent for you?

K: Yeah, but that was also because we asked to all the platforms. We had a list with questions.

IN: So you asked them already before they selected you?

K: Yeah, we wanted their proposal, but we had also some standard questions that they need to answer. So that we can make the same decision for every party. Here in Dutch we say then we can compare apples with apples. Not apples with something else.

IN: When it came to how to structure the loan, did you decide that by yourselves. Or did Greencrowd get involved? Like the tranches for example.

K: No that was on proposal from Greencrowd and also from the other party who advised me. That was a little bit brainstorming between more people than only Greencrowd and me. Because I also have a board above me, with a CEO etc. And they were involved in the total project, and crowdfunding was just a small part of the total project. It's a project of 10.3 million euros total costs. Every month we had a meeting with my board and the CEO and

advisory. And we spoke about a lot of things, also Greencrowd. Especial with the Crowdfunding we had some separate sessions in a small team about ideas, about tranches, the size of the loan.

IN: So mostly you were the contact person between [anonymized] and Greencrowd?

K: There were also in the beginning some direct contacts between Greencrowd and my advisor. But I made the decisions. And when I think I can't make the decision by myself then we spoke about it in the monthly meetings with the board and the CEO.

IN: If you would have to give feedback to Greencrowd, would you say there were things that they could improve regarding their website, or communication or collaboration?

K: I think, that we had some discussions about the information they put on their website. Because we are a bigger company and work a lot with our people, the households etc. So I have colleagues, 3,4, 5 maybe at the moment, colleagues, who are doing the communication for [anonymized]. And my colleagues looked at the site of Greencrowd. And yeah, they had some remarks. It's better to speak about that, it's better to say that. So, communication it's a job on its own. To do it good. But yeah on the other hand, I heard from Jan Willem from Greencrowd, they do it for some years now. And they have some funders who only look at the site, don't read the whole text or information because they think okay, that's okay, from Greencrowd. We just look at how much is the funding, what's the risk and what I get for it. They look just at the financial results. They think okay, good project, they go for funding. So that's the other side of that. Sometimes I had some remarks on the site. Also based on input from my colleagues. And Jan Willem said okay I'll change it, but they don't read that stuff. We had to do it. For parties like Greencrowd I think it is necessary to have a good view on the client site. What's the client? What message wants the client? I think that's the lesson. Don't do it the way you always do. No, look at the client. But we are a complete other client as a commercial developer who wants to fund.

IN: But when it came to publishing the project on the website, did they show you a draft beforehand?

K: Yeah, that was in the contract. You'll get first a draft. I looked at it more from the project and the technical view, I'm a civil engineer. So, I'm not a communication expert. But then I gave it to my colleagues and said okay give me some information, give me some input.

IN: I've seen they also then promote the projects on the social media channels. Did they also involve you in this process? Or did they do that completely independent?

K: No, they involved us. But we had maybe a special agreement. Because we had the choice to use our own social media, because [anonymized] has also LinkedIn and Twitter and so on. We used it as [anonymized]. And when the funding wasn't performing that well, we said to Greencrowd, okay use your own social media. And when there was a lot of text on their social media we get a draft. But for short messages they did it by themselves. And when they used their own social media channels, we paid a little bit more to Greencrowd for their job, than when we used our social media channels. So that was also part of the deal. But I think that maybe for 80% of the funding we did it via our public relation channels. But for the last part, the last 10, 20% then was the action more by Greencrowd to use their social media.

IN: In general, would you consider doing Crowdfunding again? Did your general view on Crowdfunding maybe change before and after?

K: No, I don't think my view has changed. Maybe it was a little bit complex. The three tranches with different amount of money. With different size of the loan. There was a vision behind that choice. We thought our colleagues, the [anonymized] persons would do more funding. Maybe next time we'll say okay one tranch for x year that's the loan and just do it for whole Netherlands in once. But I think it is also looking at other projects, other parties. For a wind park in this area. They did it in another way. We are no competitors. We didn't have competition from other projects. But yeah you had to look are there other projects in our surrounding, also funding and what they are doing. People make their choices. Some people say only solar no wind, other people say doesn't matter solar or wind, I take the highest return.

IN: Do you think it was sufficial in terms of involving the community into the project?

K: Yeah, we got a lot positive reaction from our stakeholders, from the communities. Okay, a lot of people in the area had the chance to fund. Not only two or three big people from Amsterdam with a lot of money.

IN: And I've seen in the news you also were mentioned. So also the public was more aware of it?

K: Yeah, most of the times we did it by ourselves. To the press. Telling them okay we started a new phase etc. Always in interaction with Greencrowd. By sending them a draft from messages to the press. Yeah, we gave a lot information, local in our region. But I think it worked, 250 people from 340.

IN: So, you would consider doing Crowdfunding again?

K: Yeah, maybe even a decision to finance a project. Well in the beginning we thought - that's why we financed the project in another way and doing the crowdfunding for refinancing afterwards - maybe it costs us too much time. Maybe it costs a year, maybe it costs more than a year for the funding. By financing and you have to wait for more that can give a delay for the project. And we don't want a delay for the project. Because from the subsidy we also had some deadlines to realize the projects. Otherwise we don't get the subsidy. So that was more important for us than Crowdfunding. But I think when we would have a new project, we'd also do some funding. Exactly the same way? I don't know. Maybe with a smaller choice for tranches etc. etc.

IN: Would you then consider again reaching out to all Crowdfunding Platforms again in that case? Or rather build on the relationship with Greencrowd?

K: Mabye, maybe. I think in some years, if we had another project for crowdfunding, I would look around. Are there new parties? And as part of a public organization we always must speak with more parties. We cannot decide by ourselves to do only a job with one.

Appendix F - Interview Transcription Project P2

Interviewee: P. (anonymized); Project Manager of P2

Interviewer: Moritz Häußler, author of this master thesis

Date of interview: 09th of May 2019

Location of interview: Interview via Phone

Transcriber: Moritz Häußler, author of this master thesis

List of acronyms: P = Interviewee; IN = Interviewer

IN: I'd like to focus first on your role within the P2, what was your role within this?

P: My first role was to become a member of P2. That's where it started for me. About the same time as I was a member, two guys asked me if I want to help with developing a solar project. In the first case it was a solar project for 1,500 solar panels. After few time, I get to choose for a bigger amount of panels. That's why we came up to 6,000 panels. So actually, the two men that were busy with that - I think 3, maybe 4 months - but it was just them talking here, talking there. And when I joined them, the three of us had to make a serious progress, and after a while, I think after 2,3 months, we had a project, which we wanted to develop. And after a half year, one of the two guys quit, because he had too much work with his own business. And then another one joined us. So after almost a year we still were with three people, three developers, but one had left and one came new. So that started the project. And after that we needed some time, we thought, to develop the project, so that we can start building and construction. But we didn't get the SDE, so that's the subsidy from the government. That was the first delay in the project, for almost three quarters of a year. And at the end we needed a lot of time for the financial close. In the original base case planning we had three months for the financial close, and then in the end it costs a year. So it was also a delay. Okay, but after that, when the financial close was there, then the building and the construction began, and the three of us are all technically educated, so that was the easiest part of it.

IN: And why did you decide to have the floating solar park?

P: In the beginning there was a price tender of the local government in [anonymized]. Netherlands has twelve provinces. Provence [anonymized] had a price tender for new ideas to produce green energy. And we saw somewhere a picture of floating solar panels, and we thought, hey that's a good idea. Let's see if we can do that in our local community. So, we found the water where the project is now located, and we asked the owner if we can use his water to put some floating solar panels on it. And the owner was quite well with the idea. And he said it's alright. And so the project for a floating solar field began.

IN: And the goal was - as far as I understand- to provide the local community with sustainable energy?

P: Yeah that's still the goal. But in the Netherlands, you need an electricity company to deliver at your house. And the electricity company buys electricity from the stock market, the ADX in the Netherlands. Or the electricity company buys it directly from the producer. So we still needed a electricity company. We can't see who our customers are. So, our goal is of course to deliver green electricity in the local community. But when for example my neighbour says I want to buy the power from your solar field he has to go to the electricity company and he becomes one of the customers. Yeah it's not directly purchasing at our project. That's how the electricity market is build up.

IN: In this context, you then choose to partly finance the project via Crowdfunding. How did you come across Crowdfunding initially? Where did you see it or find it?

P: Yeah of course we heard it. And for me personally I invested since quite a few years in crowdfunding projects, for example from Greencrowd. I think I'm one of the oldest crowd funders from Greencrowd. For the floating solar field, in the price tender from the local government, there was a price you can win, it was 250,000 Euros. That was for the first six ideas, we were seventh. So we had nothing. But then the province told us okay, there is some subsidy if you have a minimum of 50 crowdfunders with the amount of money. Then the province doubles the money with an extra subsidy. So that was for us the start to set up a crowdfunding campaign. At first we put it directly to our own friends and families and relationships in our own network, and then I think in three or four days we had 135,000 Euros Crowdfunding Capital. Yeah it goes fast. And now we get the same amount of money from the province. Okay and when we structured the financial project, then we asked all the crowd funders, okay, become a member of Greencrowd and on the page of the floating solar field. Create your own account and pay your money there. That's how our crowdfunding campaign was organized.

IN: But in the first step when you had your friends and family involved, Greencrowd was not involved? It was just like a private crowdfunding round?

P: Yeah, exactly how you say it. It started as a private crowdfunding round. And after that we went to Greencrowd, and said okay we already have a list of people who say I want to become a crowd funder. Can we use your platform for the administration? And that was alright.

IN: And why did you specifically choose Greencrowd as platform?

P: Yeah, I'm already a crowd funder of Greencrowd, so I know Jan Willem [the founder of Greencrowd] for quite a few years.

IN: But you didn't consider any other platforms, because you were convinced that Greencrowd can do the job so to speak?

P: Yeah, exactly.

IN: In terms of communication with Greencrowd you already mentioned that it was a bit tough to reach out to them because they were very busy. So in general which communication channels did you use?

P: Telephone, E-mail. Telephone to some colleagues, the lady in the office. But there are just few people working at Greencrowd. But it's quite simple, they are busy. And when people are very busy, it's always hard to contact them. It's just the way it is. When you are studying for some final exams, you are also busy and you don't have time to contact your friends and family.

IN: But it lead to any disadvantages, so for example when you had something urgent you managed to get feedback from Greencrowd?

P: No, no no.

IN: In terms of communicating with the investors, did you also try to reach out more to the general public through the platform?

P: We didn't. It wasn't necessary.

IN: So it was always limited to the regional investors?

P: Yeah.

IN: In terms of collaborating with Greencrowd, did they help you with the structuring of the loan for example?

P: Yeah a bit, but not very much. We actually did it by ourselves. And quite early in the process we contacted a few commercial banks and asked if they want to finance the project. And after few meetings with several banks we chose one bank, and we asked the bank if they would help us to structure the project in the right way. And they wanted to. We did it on our own, with help from the banks.

IN: On the platform itself there was a project description about the floating solar park, have you been involved in the way it is communicated there?

P: No, we made the information memorandum, we made it by ourselves. I didn't understand your question, I think.

IN: So on the website of Greencrowd there is the overview of all the projects they are funding. And I was wondering with regards to the floating solar park, if you put all the information there or if Greencrowd did that for you?

P: Oh yeah, Greencrowd does it by themselves. But they used information we gave them.

IN: And in general, how transparent was the screening or selection process for you?

P: In terms of the rating?

IN: Yes, for example the rating.

P: Yeah, do you mean if we have been involved in putting the rating?

IN: No no, but if it was transparent for you, like okay these are the decision criteria of Greencrowd, if they select you as a project. Was it easy for you to understand the whole selection process?

P: From the point of view of me or from an investors?

IN: From you as the project owner.

P: For me it was transparent. But I spoke to a lot of crowdfunders. And my own conclusion from this is that although the information is a large amount of information. The project overview is good, the risks are described good. But although there is a lot of information, there are crowdfunders that don't know what they are doing. You always have that. You always have that. You always have people that just see, okay, I put a 1,000 Euro in it and I get a three percent, that's alright. For me some things are very transparent, and I know exactly what it means. But for old people, they say I get it, but I'm sure they don't get it.

IN: Would you say you achieved the goals that you wanted to achieve with Crowdfunding?

P: Well, we have now I think 80 crowdfunders in this project. But the local community is 48,000 people. So the percentage is nothing. But I think a lot of people, they have money in the bank and they don't even think a minute in a month about - okay, I get zero percent interest on my money. And if I put it in a project like this, I get three percent. A lot of people are not busy with their own financial situation at all.

IN: Do you think some people might not consider it because it's new and unknown to them. Or do you see other reasons maybe?

P: For example my mother-in-law thinks that everything that isn't a bank is scary. And she doesn't understand it, and it's too difficult, and risks and risks and risks. And in that case I told her, okay, mother-in-law just let it stay at the bank. That's for you the best. And I think a lot of old people they don't grew up with investments and participating in projects. They just work earn some money and put it in the bank. So I think for older people it's quite difficult to understand it. And for young people, a lot of young people they don't have money in the bank. Because they live from it. They go on holidays, for a long trip, sabbaticals, buy new things. Just ask younger people, you can choose here is 1,000 Euros put it as an investment in a 8% crowdfunding project or buy a new I-Phone. I think most of them would buy an I-Phone. So the young people they don't grew up with the mindset, let's save some money. It's better to have something in the pockets than to have a new I-Phone.

IN: Then maybe a bit more general question: What do you think is the potential of crowdfunding to help support the sustainability transition in the Netherlands?

P: Yes of course it's very good. If you want to finance a project, the bank says okay you have to take 20% money from your own, and then you can get 80% financing for the project. So crowdfunding is a very good way to collect the 20% of your own money, the equity. It's a good way to collect your own equity. That's from a financial point of view. But the next step, I think we don't have that yet, the energy transition is a chance for all the people, for all the communities to become own members of our project installations. Cables, grid connection cables in the ground. But then they have to become a member of a local community like P2, put a lot of money in it, and then you could do it by yourself. Instead of being dependent on the big electricity companies doing the investments.

IN: Where do you see the advantages of crowdfunding compared to financing through the banks?

P: Well I think if you can finance a project with 100% of crowdfunding capital, then the revenue of the project goes to the investors. People who take the risk. And if there is a bank involved, the first thing a bank says, is okay I want to finance a maximum of 80% of the equity so bring your own 20% capital with you. And the second thing the bank says is I want to become the boss if the project is not going well. The shareholders ask for nothing, but the bank is the boss then. So that's the way how they do it. And I think if you can get the chance

with 100% crowdfunded capital, it's always better. Of course, bank offers easy money. It's cheap money nowadays. 2% of interest rate. So that's very cheap money.

IN: My very last question would be if you personally would consider doing Crowdfunding again to fund energy projects?

P: If I do it again? Yes, yes I would do it again. But also with a bank with it. Because it's cheap money.

IN: So you think a combination of both makes most sense for you?

P: Yeah.

IN: Thanks a lot for your insights. That was very helpful.

Appendix G – Interview Transcription Investor I1

Interviewee: B. (anonymized); Long-time investor in Greencrowd

Interviewer: Moritz Häußler, author of this master thesis

Date of interview: 20th of May 2019

Location of interview: Conducted via e-mail

Transcriber: Moritz Häußler, author of this master thesis

List of acronyms: B = Interviewee; IN = Interviewer

IN: How did you first get in touch with Crowdfunding?

B: I was surfing the Internet and found their website

IN: What is your motivation for participating in Crowdfunding in general?

B: The Green character of the crowdfunding and (especially in the beginning) the no-nonsense approach of the people at Greencrowd

IN: What is your motivation for participating in Crowdfunding for sustainable energy projects in particular?

B: To have a good feeling about what is done with your money

IN: Since when are you investing via crowdfunding?

B: 2014

IN: Which crowdfunding platforms do you use?

B: Greencrowd and KNAB. But recently I stopped with KNAB.

IN: Why do you use these particular crowdfunding platforms?

B: Greencrowd because its green character; KNAB because it is my bank

IN: How was your general experience with crowdfunding so far?

B: It is interesting to be involved in these enterprises. However there were several failures.

IN: How did you experience the registration process on the website? Was it intuitive?

B: In 2014 it was still done with papers and mail.

IN: What do you think about the general design of the website and its usability? Simple and effective

B: How did you experience the investment process? I rely on the judgement of Jan Willem

IN: Based on which criteria did you select the projects in which you invested?

B: Mainly by checking if I had cash available at a specific time, when the project was announced.

IN: As how transparent did you experience the platform? (Especially with regards to process documentation and information about the investment projects)

B: The content of projects is nicely described. The data on the investment overviews are sometimes in delay

IN: Did you try to get in contact with Greencrowd? If yes, how did you experience the communication process and which communication channels did you use?

B: Yes, I did that several times by E-mail and a few times by Telephone. There was always a good and polite reply back.

IN: Would you have liked to have the option to get in touch directly with the managers of the investment projects? Why so?

B: No, I trust the judgement of Jan Willem. I have no time for investigating many details of the projects

IN: As how trustworthy do you perceive Greencrowd? What are factors that influence this perception?

B: Very trustworthy: Because of good feedback; Because of good explanations in case of trouble (E.g. Kratochvil-case); Because at the investor side the trouble is primarily solved by helping them and not by sewing them.

IN: What would be your feedback to Greencrowd? Is there anything that could be improved, esp. with regards to the website, the communication process or the collaboration?

B: The payment schedules, connected to the Projects are not always up-to date. This could be better.

Appendix H – Overview a-priori themes based on literature review

A-priori Theme	Description
Value Proposition	Refers to the perspective on the value proposition of green crowdfunding from the stance of the respective stakeholder
Role Expectations	Specific expectations regarding the role that Greencrowd should take on within the overall ecosystem
Architecture of participation	How is collaboration encouraged and steered on the platform? Who can access the platform? Are there restrictions on participation?
Evaluative Infrastructure	How is quality control ensured on the platform? What are measures to create trust and support decision-making of users?
Interface Design and Communication	What are core interactions facilitated through the interface? How is communication organized?
Governance structure	Who makes what decisions about a platform, i.e. how are decision rights distributed, how is ownership and leadership organized; centralized vs. diffused governance
Competitive strategy	What is the competitive stance of the platform within their market? What are future growth ambitions?

Appendix I - Descriptive Overview of Greencrowd's interface design and communication processes:

Having passed the selection process, Greencrowd offers project owners advice on how to structure the crowdfunding campaign, i.e. regarding overall funding amount and set-up of the tranches. Ensuing, crowdfunding projects are displayed online on Greencrowd's website. The content of these online campaigns is created in collaboration with the project owners. However, the interview partner stresses that the final decision is up to Greencrowd:

"we decide if it's acceptable and confirmative" (Greencrowd Interview, 2019, p.100).

This demonstrates the strong gatekeeping role that Greencrowd is exercising - not only with regards to the selection process itself but also in terms of the communication process.

All crowdfunding campaigns are publicly visible on Greencrowd's website, without prior user registration, making it easy for citizens to inform themselves about the projects and potentially boosts the reach that the campaigns are achieving.

Next to offering an overview of all crowdfunding campaigns, the website provides more information about Greencrowd itself, a FAQ-section, news about recent developments concerning Greencrowd, information for users about the investment process, as well as info targeted at project owners about how to apply for funding via the platform. Constructing the website in such a detailed and user-friendly manner can be once again interpreted as an attempt to further strengthen trust and mitigate possible concerns that investors and/or project owners might have. In addition to acting as an information vehicle, the website also allows citizens to register as users and project owners to apply for funding.

To support project owners with marketing activities, Greencrowd is offering to assist them by utilizing their own social media channels. These activities help not only to reach potential investors, but to generally increase awareness of respective green energy projects and possibly improve their public perception.

For their services, Greencrowd is charging project owners with a one-time payment of 100 Euros in conjunction with a 3% fee on the funding request, with a minimum of 1500 EUR. If required, Greencrowd is also managing the administration of payments, such as sending out

payment links, creating payment schedules or handling outstanding payments. An additional fee per crowd funder is charged for this service (2EUR per person per year (in case of yearly tranches), for quarterly tranches 4EUR per person per year).

According to P1, distribution of work in terms of Marketing efforts was split 80-20 in favor of their own activities. Payments to investors were however completely handled by Greencrowd.

Since crowd funders had been acquired through own social ties, no extra marketing efforts were necessary in P2's case.

Once the campaigns are launched online, investors can start to invest money into the project. Every project has a pre-defined funding goal that needs to be reached, as well as a funding deadline. The funding goal can be further split up into a minimum and maximum amount. The investors are required to transfer the actual money only once the funding goal has been reached. In case the target has not been reached, the investors face no liabilities. If requested by project owners, the funding can be further split into several tranches with varying duration and interest rate.