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Article

# Conditions for Co-Creation in Infrastructure Projects: Experiences from the Overdiepse Polder Project (The Netherlands)

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**Abstract:** In recent decades, stakeholder engagement had been gaining momentum in planning practice. More recently, at the heart of the discussions about collaborative endeavours stands the concept of co-creation, an umbrella term for multiple forms of collaboration between stakeholders, which is seen as an approach for fostering new and innovative solutions for highly complex challenges. Despite this idyllic representation, co-creation does not always lead to positive outcomes. One reason is that co-creation poses major operationalization challenges, which make it a significant subject for research. In this article, we explore the conditions that allow co-creation practices aimed at fostering innovation and creativity in infrastructure projects to take place and flourish. Based on the review of literature on co-creation, on the analysis of project-related documents, and on in-depth, semi-structured interviews with the stakeholders, this article follows the co-creation process of the Overdiepse polder project, part of the innovative Dutch water management programme ‘Room for the River’. The results show that co-creation is an iterative process that depends on conditions related to the context, the characteristics of the stakeholders and their relationships, but also on the design and dynamics of the process. The results of this study can be of help to researchers, academics, and professionals interested in studying or applying co-creative approaches.

**Keywords:** co-creation; infrastructure planning; public sector innovation; stakeholder involvement; participatory planning; climate resilience

## 1. Introduction

The last decades have exposed a growing trend towards stakeholders’ involvement in planning practice based on the idea that this might contribute to a better understanding of current complex planning challenges, and to the creation of ‘win-win-win’ solutions for these challenges. This trend is visible especially in the urban, spatial, and infrastructural planning domains, where various forms of participatory, deliberative, and collaborative approaches, such as public-private-partnerships, public-private-people partnerships, or community-based initiatives, are created to include non-governmental stakeholders in policy making, decision-making, and service delivery. An important benefit of such collaborative arrangements is that they support innovation, resilience, and sustainability because the wide range of stakeholders involved may contribute with resources, expertise, and knowledge that can lead to the harmonious combination of economic, environmental, and social aspects, thus steering the sector towards achieving the sustainable development goals [1,2].

In the discussions about collaborative endeavours, the concept of co-creation has come to light. Co-creation is often presented as having positive consequences and has given rise to a plethora of

definitions and understandings [3]. The basic principle of co-creation is that everyone brings their own unique views, experiences, and interests which highlight other perspectives and help to enhance the understanding between the various parties involved in the process. Consequently, co-creation refers to making something together, or as Sanders and Simons [4] state, it refers to “any act of collective creativity that is experienced jointly by two or more people [...] where the intent is to create something that is not known in advance” (p. 27). Co-creation does not represent a collaborative technique or instrument per se, as it is the case of, for example, creative workshops or design charettes, but an overarching concept [3] that “highlights the potential impact of collaborative interaction on the ability to foster new and innovative solutions to intractable problems” [5] (p. 804). For our study, we follow the definition of co-creation given by Cottam and Leadbeater [6]: Co-creation is generally understood as a “creative and interactive process which challenges the views of all parties involved and seeks to combine professional and local expertise in new ways” (p. 22).

Despite the increasing popularity of the concept, according to Puerari et al. [5], “research that describes actual co-creation practices [...] is still hard to find even though scholars do address this issue” (p. 4). Regarding public sector co-creation, research has concentrated on the provision of services, especially on the health and education systems [7] where “the context is relatively fixed and stable and the public and private stakeholders are clearly defined” [8] (p. 806). “Literature on actual implementation and experiences in a project context is very scarce” [9] (p. 403), especially in relation to sectors, such as infrastructure, that are traditionally dominated by experts, professionals, and officials, and where there was “a distance between the public and private stakeholders that may discourage co-creation” [8] (p. 806). Zooming in on the particular domain of infrastructure planning, the water management sector seems to occupy a special place because it has started developing ‘smart’ combinations with other spatial policy sectors like recreation, nature, and agriculture [10]. This reflects in the “steady increase of various forms of participatory, deliberative and collaborative approaches to water governance and management” [11] (p. 367) that has transformed this sector into a collaborative arena. In this context, and because co-creation in the public sector is still incipient and relatively dispersed [12], our study aims to advance the understanding of the dynamics of co-creation processes in the public sector by providing a closer examination of how they unfold, and to identify the enabling or hindering conditions that influence such processes taking place. This article follows the co-creation process of the Overdiepse polder project, part of the innovative Dutch water management programme ‘Room for the River’, which is considered a successful co-creation process and thus a relevant one for the exploration of the conditions that allow co-creation practices in infrastructure projects to take place and flourish.

Section 2 of this article provides an overview of the co-creation concept and develops a framework consisting of conditions that enable or hinder co-creation based on studied literature. Section 3 introduces the research design and gives an overview of the case study. Section 4 presents the case study findings, which are discussed in Section 5. Finally, in Section 6, conclusions are drawn.

## 2. Theoretical Underpinnings

### 2.1. Definitions and Interpretations of Co-Creation

The current popularity of the co-creation concept, based on the idea of ‘open innovation’ and joint knowledge production [13], originates from the business domain, where scholars such as Prahalad and Ramaswamy [14] emphasized “the meaning of value creation” through “the practice of developing systems, products or services through collaboration with customers, managers, employees, and other stakeholders” [15] (p. 195). Co-creation has received much attention in management, marketing, and in the development of products and services [14,16–18]. However, co-creation has only recently started to become popular in the public sector, as policy-makers and planners adopted the concept in an attempt to find innovative ways to deal with increasingly complex societal and environmental challenges.

In relation to the public sector, the term of co-production is more common, which “finds its scholarly origins in the work of Ostrom and other economists who studied collaboration between public departments and citizens” [19] (p. 9). The distinction between the terms appears to stem from the degree and moment of involvement of stakeholders in the process. When customers in the business domain or citizens in the public sector are involved from the beginning in the planning of a product or service, then the process is one of co-creation; but if they are involved in later stages of the process, especially in the phase of implementation and testing of a product or service, then the process is one of co-production [7,19].

Given this subtle difference and the fact that the implementation of infrastructure projects is highly specialized due to the large costs and high technical requirements, we define in our study co-creation as “a process through which two or more public and private actors attempt to solve a shared problem, challenge, or task through a constructive exchange of different kinds of knowledge, resources, competences, and ideas that enhance the production of public value [ . . . ] either through a continuous improvement of outputs or outcomes or through innovative step-changes that [ . . . ] lead to new ways of solving it” [8] (p. 802).

## 2.2. Conditions for Co-Creation

In literature [7,9,20,21], a number of enabling or hindering conditions for co-creation have been discussed. To structure our study, we classified them in ‘contextual conditions’ and ‘characteristics of the stakeholders and the quality of their relationship’ as summarized in Table 1. The latter category is also supported by the interpretation of the co-creation term itself, which suggests that creativity and innovation are highly dependent on the ‘co’ element, so on the actors involved and the way they communicate and collaborate.

**Table 1.** Conditions for co-creation.

Category	Condition	Type of Condition	Reference
Contextual conditions	Crisis situation and a sense of urgency	Enabling	[7,20,22–25]
	Imbalance of power, authority, and resources	Hindering	[9,22,24,26–31]
	History of relations (level of initial trust)	Hindering	[22–24,32–34]
	<ul style="list-style-type: none"> <li>• No antecedents or antecedents of hostile relations</li> <li>• Antecedents of positive relations</li> </ul>	Enabling	
Characteristics of stakeholders and quality of their relationship	Diversity of stakeholders	Enabling/hindering	[3,35–39]
	Attitude of stakeholders	Enabling/hindering	[7,40,41]
	Leadership	Enabling	[20,22,27,36,42–49]

The *contextual conditions* refer to the set of specific or unique circumstances or factors that may influence the inception and trajectory of a co-creation process, thus becoming either resources or liabilities during collaboration [7,22,26]. Regarding this, literature [23–25] suggests that a crisis situation, triggered by turbulent environments and events, or by the failure of an actor or sector to solve a problem independently, leads to a shared sense of urgency that stimulates those affected to work together for finding a solution. Ehlen et al. [20] even suggest that urgency represents the starting point of co-creation.

Commonly mentioned as a hindering factor is the imbalance of power, authority, and resources between stakeholders, which impacts their levels of trust and commitment to the process [22,24,27–29,31]. The source of such structural differences resides in differences of status, in perceived discrepancies of personal capabilities, such as skills, knowledge, prior experience, or expertise in a certain field, or in an uneven control of or access to resources [9,22,29,30]. Such imbalances influence the stakeholders’

willingness to take part in collaborative processes. Furthermore, given that participation in co-creation processes is mostly voluntary, the initiators of the process must have an understanding of the incentives and motivations that trigger the stakeholders' willingness to be part of the process. The willingness depends also on the stakeholders' characteristics regarding skills, intrinsic values, level of education, but also on their awareness and perceived ability to participate, influence the process and achieve win-win outcomes [7,22]. In the beginning, the cooperative behaviour of the stakeholders, and thus their willingness to co-create, is influenced by the degree of initial trust, seen as a precursor to relational commitment [32,33]. Literature suggests that both initial trust and the quality of the co-creation process are dependent on the history of relations among stakeholders [22–24,32]. Antecedents of hostile relations determine low levels of trust and low commitment and willingness for co-creation. Contrarywise, antecedents of good cooperation prompt stakeholders' willingness to co-create because they serve as guarantees for adopting a risk-taking behaviour, which "is not about avoiding or eliminating vulnerability, or resigning to it, but about positively accepting it" [34] (p. 8). Thus, trust and commitment are simultaneously pre-conditions and outcomes for co-creation, which are reinforced with every positive collaborative experience [32].

Literature shows that important for co-creation processes are also the *characteristics of the stakeholders involved and the quality of their relationship* [7,20,26]. This is consistent with Catmull [50] (p. 74) who notes that "getting the right team is the necessary precursor to getting the right ideas [ . . . ] and getting the right people and the right chemistry is more important than getting the right idea".

It is essential for co-creation to have a diverse network of stakeholders [3,35] in terms of demographic factors such as gender, age, marital status, family composition [7,48], and capabilities, skills, motivations [30], access to resources, perspectives, and expertise [36]. Diversity's importance comes from the idea that creativity and innovation are the result of interdisciplinary interaction [38], of some sort of 'collective creativity' [4], and not the result of an individual's genius spark [51]. However, diversity can impede, in the advanced stages of the co-creation process, on consensus building due to problems of communication, which result in a lack of cohesiveness of the group, conflicts, and a negative atmosphere [36,37]. Hence, DiStefano and Maznevski concluded that "diverse teams tend to perform either better or worse than homogeneous ones, with more performing worse than better" [39] (p. 45). To accrue the benefits of diversity, leadership, and process facilitation seem to play a key role in moulding the behaviour and performance of diverse stakeholders by implementing measures that help to align values and to alleviate conflicts [52].

The stakeholders' attitude towards participation in a co-creation process, which is determined by a range of social, political, and psychological factors, is also important [40,53]. In processes initiated by the public sector, this may refer to the perspective of public officials and politicians towards the co-creation process and their openness towards having other stakeholders think along. Alternatively, this may refer to a reticent or hostile attitude that originates either in personal beliefs, in a fear of losing status, control, and ownership of the process, or in social and organizational barriers [4,7,20]. Stakeholders from open and accepting organizational cultures, in which experimentation and risk-taking are favoured, are more inclined to have a positive attitude towards co-creation approaches. Conversely, stakeholders belonging to risk-averse organizations that do not recognize other actors as potential contributors, and do not provide much institutional space for inviting or welcoming other stakeholders, are less inclined to participate in co-creative practices [7,41].

Another important ingredient for co-creation is leadership [20,22,36,42,43], as this sets the tone for openness towards a co-creative approach, brings the stakeholders together, facilitates the dialogue, and fosters a pleasant and safe environment. Leadership is also crucial for mitigating conflicts that can arise as side effects of diversity. The facilitative type of leadership, which refers to "leaders who promote respect and positive relationships between team members, productive conflict resolution, and open expression of ideas and opinions" [44] (p. 312), helps to enhance the understanding of individual strengths and weaknesses, to build trust and to support the development of sensitivity among stakeholders, thus increasing the group's creativity and problem solving abilities [43,45–47]. Similarly,

visionary leadership leads stakeholders through difficult moments of the co-creation process, helps them explore possibilities of creating win-win situations, improves confidence and interconnections between them [22,27,48], and thus contributes to the ‘collective creativity’ [49].

### 2.3. The Co-Creation Process

Besides the conditions mentioned above which refer to the “co” element, a co-creation process is also highly dependent on the ‘creation’ element, which refers to the process itself and its design, as summarized in Table 2. Steen and Van Bueren [28] describe the phases of a co-creation process, ranging from initiation, plan development, co-creative design, implementation, evaluation, and ending with refinement and dissemination, complemented with appropriate practices and actions. Given the intricate dynamics of co-creation and despite the nonlinear and iterative character of the process, we structure its design as a sequence of these phases, each being built around specific objectives, activities, and key roles fulfilled by the stakeholders. Our understanding of the co-creation process design was further enriched by the five-steps process descriptions of Russo-Spena and Mele [54] and Goullart and Hallett [55].

**Table 2.** Co-creation process.

Phase	Initiation	Plan Development	Co-Creative Design	Evaluation	Reference
<b>Objective</b>	Make the problem known and attract other stakeholders to explore it together	Develop a shared understanding of the problem and determine the direction and design of the process	Bridge the gap between identified needs and possible solutions	Make an assessment of the solutions and of the process	[28,54–56]
<b>Activity</b>	Make a stakeholder analysis; assemble the network of actors	Develop engagement platforms to foster the interactions among stakeholders; make decisions about the design and management of the process	Interaction in small creative sessions; develop a communication infrastructure	Formulate, prepare, and apply evaluation tools	[20,23,28,55–58]
<b>Role</b>	Patron/promoter Webber Advocate Co-creators	Webber Advocate Builder Co-creators Contributor Facilitator Orchestrator	Orchestrator Facilitator Co-creators Contributor Coordinator Messenger Integrator	Orchestrator Facilitator Co-creators External evaluators	[28,56,59,60]

The ‘starting point’ for any co-creation endeavour is a problem or an idea, which is made known during the *initiation phase* [28], also known as the ‘launch’ or ‘preparation’ stage [56]. Since the main objective is to make the problem or idea known [54] and to attract other stakeholders [55], the main activity in this step consists of assembling the network of actors. By undertaking a stakeholders analysis, the ‘target communities’ [55] and the stakeholders who are affected or have an interest in the process are identified and called to engage [28], based on an invitation with an explicit description of the problem or idea and of the intrinsic and extrinsic benefits of participating. Thus, besides the initiator, a crucial role is played by the ‘webber’ [59] who decides which actors should be invited; he/she is an active leader who “has the vision, the energy, and the social skills to connect to diverse individuals and groups” and “who takes responsibility for building a network” [61] (p. 48), being also known as a ‘network weaver’ [56,61]. Additionally, also essential is the role of the ‘patrons’ [56] or ‘promoters’, the individuals who support the innovation process. The stakeholders who show support

for the initiative become its 'advocates' and have the role of making it widely-known by distributing positive information.

When the network of stakeholders has been assembled, the process moves into the *plan development phase* [28], or the "initial stage of the co-creation process" [56], which presents similarities to what Russo-Spena and Mele [54] name the co-ideation or co-generation of ideas phase. Since co-creation can be understood as a collaborative process of defining and solving problems [58], the objective in this phase is to develop a shared understanding of the problem and to determine direction and design of the process [28].

A key activity in this phase is the development of engagement platforms that allow stakeholders to share their objectives, motivations, desires, and interests, thereby fostering their interaction [55] and allowing them to have an 'empathetic discussion' [57]. By considering different perspectives, acknowledging the positive aspects of each perspective, or highlighting mutual interests and finding ways to bridge the different, yet compatible ones, the foundations of co-creation are laid. Consequently, this leads to the formulation of a 'shared vision' [23,28] or "common ground" [23]. This joint sense making, which implies not only communicating, but also active listening, is essential for the development of innovative solutions because it brings clarity, it leads to building of respect and trust among the stakeholders, and it fosters an open attitude and way of communication [23,57]. Additionally, this approach helps to develop a sense of ownership of the problem and of the process, which is identified by Voorberg et al. [7] as an influential factor for co-creation. Nonetheless, very important is that all stakeholders are aware of the boundaries and 'rules of the game', and managing expectations regarding the outcomes of the process is crucial to prevent potential disappointment, frustration, and lack of commitment. Essential is to jointly decide about the design and management of the co-creation process [28] and about the allocation of roles and responsibilities of the stakeholders who need to express their capabilities and/or possibilities to contribute to the co-creation process. Although generally seen as an effective approach, the formalization of responsibilities through contracts is not desirable because it may act as a hindering factor for stakeholders' willingness to commit to the process [28].

In this phase, important roles are played by the 'webber' who brings the stakeholders together, thus creating the premise for their interaction, and by the 'advocate' who spreads positive information about the importance of the problem and of the need to adopt a co-creation approach [56,59,60]. Further, as trust is often identified as a prerequisite for collaboration [22,62], crucial is the role of the 'builders' to "establish and promote the emergence of close relationships between participants" [60] (p. 486) and "help all the actors see their own goals and input in relation to the shared objective" [56] (p. 15). The metamorphosis of the stakeholders into a group with a shared understanding and vision can be guided by the 'facilitator' [60] who must try to equalize potential power differences and to enable participants to focus on the problem, not on the persons or the solutions [50]. Important is also the 'orchestrator', who organizes and manages the network of stakeholders and their activities, directing them towards achieving the common goals [60].

Next, the process moves into the *co-creative design phase* [28] or the co-design phase [54]. Co-creation sessions are organized with the objective "to bridge the gap between identified ideas or needs and the possibility of finding a solution" [54] (p. 540). For this, interaction in small and informal creative sessions is preferable to ensure a higher attendance level and a safe environment [28]; they also allow for thematic oriented discussions [28]. Essential is the development of an open communication culture that allows all stakeholders to be informed about what happens throughout the process and about the adjustments and decisions that are made. In this part of the process, the communication between the participants needs to be additive, not competitive. In this phase, the process must be organized with a result-oriented approach and with a focus on making, rather than just talking. For this, important are the roles of the orchestrator and the facilitator, who help the stakeholders move forward towards reaching their common goals by designing and deciding on the tools and methods to be used in the process [20,56,58]. Other key roles are played by the 'coordinator', who directs the

group of stakeholders, collects the information about their needs and ideas, and forwards it to other stakeholders, and by the ‘messenger’, who sets up a transparent communication system for forwarding and disseminating the information [28,59]. Another key role is played by the ‘integrators’ [60], who by following a structured and systematic process blend the different contributions.

Finally, the process moves into the *evaluation phase* [28], also known as the co-evaluation of ideas phase [54], where the objective is to make an assessment of the co-designed ideas and of the process. Based on this, the co-creation process can be re-designed and iteratively co-created [28,56], leading to a refinement of the solutions. Main activities are related to the formulation, preparation, and application of appropriate evaluation tools (e.g., surveys, interviews, focus-groups).

This phase is mainly conducted by the ‘orchestrator’, who plans the evaluation, and by the facilitator, who seeks to involve the stakeholders in the assessment. The orchestrator can decide to involve other actors, such as external evaluators who provide fresh insights. For infrastructure projects, this evaluation phase needs to be clearly demarcated from the formal evaluation and decision-making processes, and the facilitator needs to re-emphasize the degree to which the outcomes of the co-creation process can impact the formal decision-making process and project implementation.

### 3. Methods and Data

#### 3.1. Brief Overview of the Case Study

Our study adopted a qualitative approach and is based on an in-depth single case study in the field of water management, the Overdiepse polder project. This project is part of the Dutch national ‘Room for the River’ programme aimed at flood risk management and considered in Dutch water management as an example of co-creation. The Overdiepse polder was selected as it is recognized as a special project and process in the Dutch water management sector, pointing to the novelty of concept of making more space for the river and to the transformation of a citizen initiative “into a process of co-creation in which representatives of the government (local, regional and national) collaborated with local stakeholders” [63] (p. 44) in the crafting, planning, and implementation of an innovative water management solution that combined water safety with spatial quality and agricultural functions.

The Overdiepse polder is a part of low-lying, flat tract of land, located in the province of North-Brabant, in the southern part of the Netherlands (see Figure 1). The polder, which is surrounded by the Bergsche Maas and the Oude Maas rivers, was accommodating 95 inhabitants, 17 farms, a military training area, and a marina [64]. After the near floods from 1993 and 1995, a new approach to water management was adopted in the Netherlands; it favoured the horizontal expansion of rivers over the traditional, vertical flood defences (‘Room for the River’). In this context, the Overdiepse polder was identified as a ‘search area’ for river widening measures [64]. Residents found out about the intention of transforming their polder into a retention area and perceived it as a threat to their businesses and livelihood. They decided to develop an alternative plan. Their pro-active attitude led to the development of a citizen-led initiative, which due to the socio-political context and the existence of visionary leaders throughout the public authorities, transformed into a co-creation process. The result of this process was a creative water management win-win solution that allowed half of the initial number of farmers to maintain their agricultural business whilst making space for flood storage and improving the spatial quality in the polder.





**Figure 1.** Map of the Overdiepse polder. Source: JW van Aalst, [www.opentopo.nl](http://www.opentopo.nl).

### 3.2. Data Collection and Analysis

The study started with a systematic review of the relevant literature in the fields of co-creation and living labs, seen as “spaces of co-creation, which promote open innovation processes making co-creation an essential element” [65] (p. 171), specifically with application in the planning field. Relevant studies were identified by using academic databases (Elsevier Scopus, Science Direct, WorldCat Discovery) and internet search engines (Google Scholar, Microsoft Academic) combining search terms such as “living labs”, “co-creation”, and “co-production” with “infrastructure planning”, “spatial planning”, and “public sector innovation”. Moreover, relevant studies were identified by applying the snowball method to reviewed articles, which has also triggered an iterative refinement of the search terms during the review.

We only included English written articles and books that were published after 2000, the year of publication for the work of Prahalad and Ramaswamy which popularized the concept of co-creation. The resulting studies were first filtered based on titles, abstracts, and keywords, and afterwards on the basis of the entire text. We focused on publications related to the planning field that address the phasing and design of the co-creation process, the conditions and mechanisms that aid or inhibit its evolution, the roles played by the stakeholders involved. However, given the relatively few studies about co-creation in relation to the planning field and the high incidence of the co-creation concept in other disciplines, the review was extended to publications from other fields, like education, healthcare, and product and service development to provide insights in enabling/hindering conditions for co-creation, the design of the process, and the roles of stakeholders.

The resources list includes grey literature items such as handbooks about co-creation or living labs which have been identified by searching open repositories and databases. Although they do not represent a scholarly form of publication, they are produced by practitioners and contribute to a comprehensive view of the topic by supporting the corroboration of scientific knowledge with practical experiences. This variety of domains and sources that provided relevant information to our research is reflected in the diversity of the reference list.

Our main source of empirical data was 13 semi-structured, in-depth interviews with stakeholders representing the different parties involved in the Overdiepse polder project. The interviewees included representatives of national and provincial authorities, project managers, planning consultants, designers, and representatives of the local community (see Appendix A). The interviewees were representative for every type of stakeholder involved in the project, and as a consequence represent all perspectives about the co-creation process. The interviewees were asked about their role in the process, about their perception of other stakeholders’ role, the relations between the different stakeholders, about the design of the process, and the crucial aspects that favoured the co-creation process (see Appendix B).

All 13 interviews were carried out in November and December 2019, were recorded, fully transcribed for further data analysis, and rendered anonymous following confidentiality and data protection guidelines. To analyse the data, we combined deductive and inductive approaches for coding. The initial coding themes were based on the theoretically-derived conditional factors and the design of the process, as described in Section 2. During data collection and analysis, other codes emerged. The final coding scheme is given in Appendix C.

#### 4. Co-Creation in Practice

##### 4.1. Conditions in Practice

Traditional Dutch water management was characterized by a strict hierarchical, sectoral engineering approach aimed at ‘fighting with water’. However, in the 1990s, the Dutch water management started adopting a broader vision towards the relationship between water and the surrounding environment. The near river floods from 1993 and 1995, which came after a calm 40 years period in which the Netherlands was not threatened by floods, generated a sense of urgency and shared awareness among the Dutch society that the old approaches to water management would provide inadequate responses in the future. As interviewee 5 stated: “There is no priority if you don’t have a calamity”. These events led to the emergence of water management approaches aimed at making more space for the rivers to discharge their waters that sprang from the new vision of living with water and working with nature. Therefore, in 1996, the Room for the River policy directive was born, and one of the locations used to test the feasibility of the “room for the river” concept was the Overdiepse polder. The water management project from the Overdiepse polder started in 2000 and its implementation finished in 2015. The collaborative process was favoured by a good economic period that enabled a broader approach to water management: “We had these near floods and we had an economic boom; it was a lucky coincidence” (interviewee 5).

For the feasibility studies, in which the polder was considered as a possible emergency flood storage area, only representatives of the waterboard and the farmers’ organization (ZLTO) were consulted. When the residents found about the plans, they got angry and thought to oppose through legal procedures, but “realized they could not stop the idea of the government inundating the terrain” (interviewee 8). As soon as they obtained the support of the province, they developed an alternative plan that could accommodate half of the farms as they considered “that is better than if everybody has to leave” (interviewee 8). From the interviews, it appears that the farmers knew from the beginning that “the farms were simply too small to survive and some of the farms had to be taken out, so the others could be enlarged”. This shows that the farmers understood “the urgency for all of them” (interviewee 8) and therefore “didn’t feel only victims, but also saw the opportunity of getting that polder re-worked” (interviewee 5), thus ensuring “a better future for farming in the polder” (interviewee 5). Besides, “the circumstances were ideal” (interviewee 8), crucial for the development of a co-creation process in the Overdiepse polder was the presence of “the right people, at the right place, at the right time” (interviewee 13) and the presence of “people that have a broad view on things” (interviewee 5).

Essential was the role of the farmers, who acted as a group because they shared an interest in the continuity of their farming activities. “They understood the inevitability of the project, one way or another” (interviewee 8) and became proactive. Although “their interest was basically the farming side of the matter” (interviewee 5), they also understood the intervention’s necessity for flood safety reasons. As interviewee 5 asserts, “people don’t reason in terms of NIMBY, as long as they are convinced that there is a greater societal benefit and that they get compensated in a fair manner”. Consequently, they created an alternative plan, a win-win solution that combined the functions of living and farming with water safety.

The farmers organized themselves in the Overdiepse Polder Interest Group (Vereniging Belangengroep Overdiepse Polder), which facilitated their cooperation with the province and, as interviewee 13 stated: “They managed to be a rather professional counterpart”. Two of the farmers became the representatives

of the group, due to their skills, experience, and knowledge, and because they were trusted by the others. All interviewees mentioned the crucial role of the two representatives who “knew how the government works because they spent their lives more in municipality rooms than with their cows” (interviewee 13).

Crucial also was the role of the province of North Brabant, the leader of the project, which supported the farmers from their position as “an intermediate party between the central government and citizens, for which it’s quite easy to speak and negotiate with both parties, and in which citizens have more trust as they can reach the responsible decision-makers” (interviewee 12). The motivation of the province to support the farmers was incentivised by “the fact that there was a big government program with big money, which was seen as an opportunity by the province to realize more things than only water safety” (interviewee 5). Thus, the province’s openness towards a co-creative approach could be explained by the opportunity they saw to “realize some of the provincial agenda through that money” (interviewee 5). Moreover, the province’s positioning could be explained by the attitude and visionary leadership of the provincial deputy, who encouraged the farmers to bring in an alternative plan, who “made himself the spokesman of the farmers in the polder” (interviewee 5) and who, later on, played an important role in the decision-making.

Another important role was played by the Water Reflection Group (Bezinningsgroep Water), an informal government group composed of high-level politicians, searching for exemplary projects that could put the new water policy into practice. Having gained the support of this influential group, the farmers’ plan was assigned a front-runner status and introduced to Habiforum, a think tank, that had to “stimulate discussion and show new ideas” (interviewee 5) in the field of water management in the Netherlands. Habiforum subsequently played an active role in the design and facilitation of the sessions that led to the elaboration of the farmers’ plan.

Another stakeholder was Rijkswaterstaat, the executive agency of the Ministry of Infrastructure and Water Management. In this case, Rijkswaterstaat had only a coordinating and supervisory role aimed at ensuring national flood safety and improved spatial quality goals within time and budget. Other important stakeholders were: The waterboard Brabantse Delta that had the leading role during the implementation phase, and the municipalities of Waalwijk and Geertruidenberg, which were involved in the development and implementation phases.

Since co-creation is based on the idea of jointly creating meaning, most interviewees mentioned the trust, or sometimes the distrust, among stakeholders as key enabling or hindering factor in the process. The initial trust within the group of farmers was one of the key ingredients that triggered the co-creation process. Being a relatively small group, homogenous in terms of socio-demographic characteristics, with the same occupation, and with frequent interactions, they grew strong ties and became a well-coagulated community based on shared characteristics and interests. Thus, the feeling of reciprocity and protection of one another’s interests and the high-level of bonding social capital of the residents was the main source of trust, which made them determined to act as a group. In the beginning, the creation of an alternative plan acted as a lubricant of their collaboration, but when the practicalities and the negotiations about the real-estate started, their interests started to diverge, and so did their trust.

The relationship between the farmers and the central government was characterized by distrust, the feeling among the farmers that the government didn’t see them as equal, trustworthy partners. This was fuelled by the attitude of Rijkswaterstaat, who was not enthusiastic about the farmers’ plan. As interviewee 5 notes, “the frustrating point for them was that they were not developing the plan, they simply had to respond to questions coming out of this participatory process” and “they were annoyed because they were losing control” (interviewee 12). Interviewee 13 suggests the defensive attitude may be based on the organizational culture of Rijkswaterstaat, which is: “Better at project management, but when it comes to dealing with the people, the province can do better” or “if you are an engineer, this is a problem, this is a solution, and this is the way towards it” (interviewee 5).

The conditions for co-creation as identified in the Overdiepse polder case are summarized in Table 3 following the theoretical frame (Table 1).

**Table 3.** Conditions for co-creation identified in the Overdiepse polder project.

Contextual Conditions		
Crisis situation and sense of urgency	Imbalance of power, authority, and resources	History of relations (level of initial trust)
<ul style="list-style-type: none"> <li>- The floods of 1993 and 1995 caused awareness for a new water management approach.</li> <li>- Opportunity window for testing new approach.</li> <li>- Government solution of water retention area threatens farmers businesses.</li> <li>- Opportunity window for upgrading farms.</li> </ul>	<ul style="list-style-type: none"> <li>- Government solution initially leading.</li> <li>- Alternative plan only became important with support of the Water Reflection Group.</li> </ul>	<ul style="list-style-type: none"> <li>- Low level of initial trust towards government, i.e., Rijkswaterstaat.</li> <li>- High level of trust between the farmers.</li> <li>- Close relationship between the farmers and the province.</li> <li>- Good relationship between the farmers and the waterboard.</li> </ul>
Characteristics of Stakeholders and Quality of Their Relationship		
Diversity of stakeholders	Attitude of stakeholders	Leadership
<ul style="list-style-type: none"> <li>- Overall broad diversity of stakeholders.</li> <li>- Homogeneous group of farmers.</li> </ul>	<ul style="list-style-type: none"> <li>- Rijkswaterstaat initially unwilling to cooperate with the farmers.</li> <li>- Province supportive towards a collaborative and interactive process with the farmers.</li> <li>- Water Reflection Group and Habiforum supportive towards the alternative plan.</li> </ul>	<ul style="list-style-type: none"> <li>- The provincial deputy manifested visionary leadership.</li> <li>- The two farmer representatives manifested leadership by representing the group of farmers.</li> </ul>

#### 4.2. The Process in Practice

The trigger of the *initiation phase* was a meeting on 29 February 2000 at Slot Loevenstein, where “the plans were presented with more space for the river”, in which “areas were all coloured blue, without realizing that there were people living there” (interviewee 6). Reacting on these plans, the farmers approached the provincial deputy. Being a negotiator on behalf of the province, and knowing that the plan “wasn’t at that time a project, it was a possibility” (interviewee 12), he invited the farmers to find an alternative plan. By “giving them hope” (interviewee 6), he reset the course of the project and opened the arena for a different approach; thus, “he was very important, he was the initiator” (interviewee 5).

The farmers came with the idea of ‘terps’ (man-made mounds created to ensure safe ground during flooding) and made their initiative known through the media. As a result, the Water Reflection Group, which was “trying to apply a new kind of thinking about water management, and needed examples to put it into practice” (interviewee 6) decided to support the farmers’ initiative and started to spread the word about it, becoming its advocate. This group, who also played the role of webber by bringing different people in the process together, put the farmers in contact with Habiforum.

Supported by “key persons that are willing to take the risk and the lead” (interviewee 5), the farmers’ initiative gained traction and progressed to the *plan development phase*. Because the process started without a clear explanation of the need for the transformation of the polder into a retention area, “the first question the farmers wanted to see answered was: Is it needed?” (interviewee 5). As soon as the water models showed that “the outcome was something like 30 cm lowering of the river in Dordrecht or in den Bosch” (interviewee 5), the farmers accepted that an intervention in the polder was needed for flood safety. This created a shared understanding between experts and farmers, who now felt they “were really taken seriously” (interviewee 5).

In the *co-creative design phase*, the farmers were involved in a series of co-creative sessions aimed at defining and refining alternative plans for the polder. The sessions were orchestrated and facilitated by Habiforum “who was usually working as a facilitator” (interviewee 5), by the secretary of the Water Reflection Group, and by another consultant who “was a farmer’s son and spoke the language” (interviewee 5). An essential aspect of this co-creative process is about setting rules and boundaries because “you have to manage your expectations, so every step you explain exactly what your intention

is and what room to manoeuvre is” (interviewee 5). The meetings had a results-oriented approach as each focused on a different topic: “Sometimes we had break out groups of a few people addressing different aspects; we had a session on the different alternatives, [ . . . ] we had a discussion on the damage side [ . . . ] and there was a discussion on how to treat people that will want to get out of the polder” (interviewee 5). Interesting is that despite their initial reaction, Rijkswaterstaat “had to cooperate and to provide information to the process, which they did very correctly” (interviewee 5), thus becoming contributors who provided the technical input for the sessions.

For the communication between the experts and the farmers, the facilitators acted in the role of messenger, without which the communication would have been very difficult because, as interviewee 5 asserts, “the way modelers are working, is not easy to understand”. The communication style and the atmosphere in the sessions was “very constructive” (interviewee 5), partly due to the fact that the polder “is a small community” with similar interests and farmers who “speak approximately the same language” (interviewee 7). The team of consultants also acted as integrators, as they helped putting the expert information together with the farmers’ aims and thus led to the development of three integrated alternatives (the terps plan, a central dike plan, and a nature plan), which were later incorporated in the environmental impact assessment as part of the formal decision-making process.

Although the final choice about the alternative to be implemented was taken in the formal decision-making process, the *evaluation phase*, in which the farmers showed their major support for the terps plan that also met the aims of the provincial agricultural development plan was essential to finalize the co-creation process of alternative plans. Once the farmers alternative plan was incorporated in the formal planning process, the co-creation between the farmers and the authorities continued throughout the formal planning and implementation phases. However, given the complex and technical character of the project, the space for co-creation diminished more and more towards the completion of the project.

The process of co-creation as identified in the Overdiepse polder case is summarized in Table 4 following the theoretical frame (Table 2).

**Table 4.** Process of co-creation in the Overdiepse polder project.

Process of Co-Creation			
Phase	Objective	Activities	Roles
Initiation	Reset the project and transform it into a collaborative planning process.	- Demarcation of the position of the co-creation process in the formal planning process.	Patron: Provincial deputy. Webber: Water Reflection Group, Habiforum. Advocate: Provincial deputy. Water Reflection Group Co-creators: Farmers.
Plan development	Establishment of relations between the stakeholders.	- Developing shared understanding between experts and farmers. - Setting rules and boundaries to build trust and commitment. - Agreements that specify roles, tasks, and responsibilities.	Webber: Water Reflection Group, Habiforum. Advocate: Water Reflection Group, Habiforum. Builder: Habiforum and secretary of the Water Reflection Group. Co-creators: Farmers. Contributor: Rijkswaterstaat. Facilitators and orchestrators: Habiforum and secretary of the Water Reflection Group.
Co-creative design	Refinement of the alternative solution(s).	- Co-creative sessions, each focused on a specific topic. - Sessions focused on doing rather than talking.	Facilitators and orchestrators: Habiforum and secretary of the Water Reflection Group. Co-creators: Farmers Contributor: Rijkswaterstaat Coordinator: Two farmers, representatives, Habiforum. Messenger: Province of North Brabant, Habiforum. Integrator: Habiforum.
Evaluation	Deciding which is the preferred alternative plan.	- Selection of the preferred alternative plan by the farmers. - Presenting alternative plan to the ministry.	Facilitators and orchestrators: Habiforum and secretary of the Water Reflection Group. Co-creators: Farmers. External evaluators: none.

## 5. Discussion

### 5.1. Conditions

Regarding the contextual conditions, which are critical for the process management but rarely given the deserved consideration [66], interviewees mentioned the sense of urgency created by the near-floods from the early 1990s that prompted the adoption of innovative approaches for ensuring flood safety. This is supported by the findings of Horlings [67] and Rijke et al. [68], which mention the sense of urgency as a necessary factor for the realization of the Room of the River national programme. However, the findings also show the urgency perceived by the farmers who were aware of the changes in the agricultural sector and of the necessity modernize their farms. Interestingly, this mix of (different, but related) urgencies was an important ingredient in the Overdiepse polder project. This finding is reinforced by Coenders [69], who emphasizes the *synergetic connection of urgencies* that is necessary for crafting the willingness to participate in a co-creation process and to develop new innovative spatial solutions.

The sense of urgency and uncertainty felt by the farmers in relation to the future of their businesses even took precedence over the imbalance of power, authority, and resources that initially characterized their relation with the central government. Despite the “power-resource-knowledge asymmetry” [22], the farmers adopted a pro-active attitude and developed alternative plans. Worth observing is that the imbalance of power, authority, and resources is not a static condition, but a dynamic one; it manifested in the beginning, but was further attenuated given the context of the paradigmatic shift in water management taking place in the end of the 1990s in the Netherlands, which resulted in high-level political support for the farmers’ initiative, thereby confirming that the *social and political environment* has a crucial impact on the planning and evolution of infrastructure projects [47]. However, the initial imbalance had a long-lasting impact on the farmers’ trust relationship with the central government, and this is well captured in the statement of the chairman of the Overdiepse Polder Interest Group (OPIG): “They were more afraid of the government than of the water” [70] (p. 64). The mistrust regarding the central government was probably also influenced by the criticism of Rijkswaterstaat that manifested in the 1990s. In contradiction to the literature, the lack of initial trust in the central government did not lead to an uncooperative behaviour of the farmers; but this was mainly because of the open attitude of the province, who supported the farmers in their attempt to change the course of the planning process. Thus, while initial trust is a desirable factor for co-creation, our findings suggest that in its absence the *use of an intermediary organization* facilitating the collaboration can be a solution. This is in line with the conclusions drawn by Torfing et al. [8].

One aspect mentioned by the interviewees as an enabling condition for co-creation was the *homogeneity of the group* of farmers, which helped them to be united and have a strong voice and negotiation position. Strikingly, this might seem to contradict the stance according to which *diversity* is a key enabler for co-creation. However, taking a wider angle, the project involved a multiplicity of stakeholders (farmers, representatives of the central, provincial, local authorities, politicians, engineering companies, design consultancies, and think tanks) who brought heterogenous types of competences and skills, knowledge, perceptions and experiences, perspectives, and goals [71]. In line with Kurtzberg and Amabile [72], the overall diversity of stakeholders aided the creative process and appears to be an essential condition for co-creation, while the homogeneity of the inhabitants in the polder thwarted the side effects of diversity, thus also acting as an enabling condition for co-creation. Nonetheless, throughout the stages of the project, the shared leadership (in the planning phase the leading role was played by the province, which was taken over by the waterboard Brabantse Delta during the implementation phase, and Rijkswaterstaat had, during the entire process, a coordinating and supervisory role) was a very important aspect for the trajectory and evolution of the co-creation process as it helped “to produce a shared mindset and mutual absorptive capacity among heterogenous sub-units” [66] (p. 18).

From this diverse group of stakeholders, some stood out as being highly willing and motivated to become engaged in the planning process. While the farmers were motivated to create an alternative plan to the one proposed by the central government as it allowed at least part of them to continue with modern farming in the polder, the province was motivated to support the farmers as they saw the opportunity to solve some issues that were on the provincial agenda.

The presence of motivated actors in the early phases of the process seems to be a necessary condition for co-creation, thus reflecting the literature [40], which mentions both intrinsic and extrinsic motivations as drivers for co-creation. Since stakeholder motivation seems to be a necessary condition, it might mean that co-creation processes in infrastructure planning are more likely to happen when they refer to small-scale, close-by issues that stakeholders easily relate to. Particularly in infrastructure projects, the *involvement of the regional government level* (such as the province), as an intermediate governmental tier, with closer ties to the local community and greater responsiveness to its wishes and priorities, can be regarded as a necessary condition for co-creation.

Furthermore, the stakeholders' attitudes towards the openness of the co-creation process varied. Our interviews showed that the representatives of the province had an open attitude, whereas in the early phases, Rijkswaterstaat seemed rather unwilling to cooperate. Belonging to an institution with an *open organizational culture which appreciates collaboration and is not risk-averse* can be regarded as an enabler for a co-creation process [7,41]. In the case of the Overdiepse polder project, the open attitude exposed by the province was imprinted on one hand by the provincial deputy who, as a visionary leader played the role of the patron and opened a window of opportunity for collaborative interaction, and on the other hand, by the project management team who favoured an open and interactive process that offered more space and opportunities to the farmers' initiative. Thus, *visionary and facilitative leadership*, also seen as a determinant of organizational culture, seems to be a necessary condition for co-creation, especially, but not limited to the early phases of the process.

## 5.2. Process

The Overdiepse polder project was not designed as a co-creation process, but evolved into one partly due to the favourable conditions mentioned in the previous section, which prevented it from falling on the traditional path where "stakeholders are involved after a specific technical solution has been chosen, but before its practical development has been fine-tuned" [73] (p. 169).

Our findings show that when secrecy and lack of communication characterize the early stages of major infrastructure projects in which the governmental authorities do not share their intentions with the communities affected by their plans, mistrust and opposition do not take long to appear. The Overdiepse polder case showed that even in cases of inauspicious beginnings, projects can still change their course if highly motivated stakeholders expose a proactive attitude and find support from public authorities who have visionary leaders that are not afraid to take risks and are willing to experiment. These insights confirm literature about innovation management [74,75], which highlights the crucial role of the *power promoters and webbers in the initiation phase*, to protect the idea, to inspire, and to encourage the co-creation process. Our case demonstrates that, especially for those situations where the project is not constructed with a co-creative approach in mind, *the initiation is the most critical and challenging phase* for the progression and outcomes of a co-creation process, especially because it depends on difficult to control variables such as context, timing, and the human factor. A similar conclusion has been reached by Edelenbos [63] (p. 48), who asserts that "timing and finding the right people in governmental agencies turn out to be crucial factors for generating support for local stakeholders' initiatives in flood risk management".

Our findings also show that even in those cases where institutional space is created and a co-creation process is accommodated, it does not necessarily become part of the formal planning process. This could be explained by the fact that while collaborative approaches, such as co-creation, are based on the idea of equal stakeholders and ignore the power relations, the latter are an integral part of the formal planning process for infrastructure projects. In positive cases, like the Overdiepse

polder project, the co-creation process can have a high impact, resulting in having the outcomes of the co-creation process incorporated in the decision-making. However, there are also cases when the outcomes of the co-creation process have no or limited impact on the decision-making process resulting in “frustration, disillusionment, scepticism, and anger” [76] (p. 18), mainly due to the discrepancy between expectations and actual experience. For this reason, and because the involvement of various stakeholders in the early phases creates expectations [9], there is a need for the initiator, together with the decision-makers, to *clearly demarcate the position of the co-creation process* in the formal planning process.

Further, these aspects need to be communicated to all stakeholders right from the beginning and along the process as this helps to *manage the expectations, to build trust and commitment*, and to alleviate power and information asymmetries. Not only for such issues, but for the entire co-creation process, a key feature is *transparency*: Transparency about intentions and goals, transparency about the position of the co-creation process in the formal planning process, transparency about what information can be or cannot be shared. Transparency is a critical feature, as it shows the stakeholders what to expect and, most importantly, that they are taken seriously and their participation is valued, thus leading to increased trust, accountability, and commitment towards the co-creation process [9,14,77,78].

Our study shows that a key role may be played by the *facilitator* who “not being participant, having no authority on the group, and having no vested interest in the outcome” [79] (p. 126), guides the process and manages the interpersonal dynamics. Facilitators play a dominant role throughout the co-creation process because, while helping the stakeholders move forward to their objectives, they prepare and keep the co-creation sessions effective, and help the co-creators to combine their perspectives. This is consistent with the findings of Steen and van Bueren [28], and shows that the facilitators act as knowledge brokers who translate the information between the stakeholders.

A couple of interesting aspects that emerged from our study are related to the organization and management of the co-creation process. Firstly, Steen and van Bueren [28] indicate that strong formalization can work counterproductively. This contrasts with our findings in practice, showing that where multiple public authorities are involved, agreements in the form of ‘*contracts*’ that *clearly specify the roles, tasks, and responsibilities* are desirable as this brings clarity, raises institutional commitment and willingness to cooperate, whilst eliminating possible disagreements about responsibilities. Interesting in our case study was the position of Rijkswaterstaat, who played (and was wrestling with) a double role, of initiator and of contributor, being also the representative of the national government. Secondly, the study confirmed that all four phases presented in the first part of this article are important for the trajectory of the co-creation process, as each of them, with its own specific type of activities, have an impact on the relationship and interaction of the stakeholders and thus also on the outcomes of the process. An interesting observation is that even small misunderstandings or intermediary evaluations can determine the process to loop back and forth, within the same phase or even between phases. Therefore, in line with the findings of Rill and Hämäläinen [3], we conclude that *co-creation is not a linear process* that starts from a problem and ends with a solution, *but is in fact an iterative process*, with numerous feedback loops that lead to a continuous refinement of the problem definition, of the process itself and of the outcomes.

## 6. Conclusions

Although there is a wealth of literature on co-creation processes based on the experiences from different fields, there is still much to be learned about the enabling or hindering factors and about the dynamics of such processes, especially in relation to the public infrastructure sector.

The study illustrates that engaging with the stakeholders that will be affected by the project early on by adopting a co-creative approach may lead to the development of out-of-the-box solutions to complex problems. However, this depends on a series of conditions related to the context, the characteristics of the stakeholders involved, and their relationships, but also on the design and dynamics of the process.



The Overdiepse polder case benefited from a 'nourishing cocoon' made of a favourable policy and economic context, pro-active stakeholders, innovative and visionary leaders, and high-political support that led to the transformation of an infrastructure project into a co-creative endeavour. Even though the attainment of such a 'nourishing cocoon' might prove problematic as it depends on many variables, the study provides relevant conclusions for other infrastructure planning projects adopting a co-creative approach:

- The basis of a co-creation process stems from a synergetic connection of urgencies that triggers the stakeholders to collaborate;
- the overall diversity of stakeholders is an essential condition for co-creation, while the internal homogeneity of groups of stakeholders may be beneficial;
- the co-creation process needs to start from a well-defined problem, that allows for a shared understanding and a common ground among the stakeholders, thus leading to commitment to the process;
- open and transparent communication is a fundamental aspect for the development of trust-based relationships among stakeholders;
- early agreement about roles, responsibilities, process structure, boundaries, and position of the co-creation process in the formal planning process is needed to provide a clear basis for collaboration;
- to motivate stakeholders to participate in a co-creation process related to a major infrastructure project that falls under the responsibility of the national government, the involvement of the local government level with closer ties to the local community, and greater responsiveness to its wishes and priorities can prove beneficial.

In addition to these conclusions, the present study contributes to the existing literature on co-creation by providing (much needed) empirical data from a project context in the field of infrastructure planning. The study also contributes to the wider discussions about innovation and adaptivity in spatial and infrastructure planning by exploring the stages of a co-creation process, the conditions that enable or hinder its inception and development, and the roles that the different stakeholders play.

We realize that our study is only a single exploratory case study that focuses on one specific co-creation process. Consequently, further case-related research is required to validate our findings related to the conditions and dynamics of co-creation processes. Since co-creation is not a linear process that starts from a problem and ends with a solution, but is in fact an iterative process of continuous refinement of the problem definition, of the process itself, and of the outcomes, we recommend future studies based on an action research methodology that test some of the identified conditions and mechanisms in practice.

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## Appendix A

**Table A1.** List of interview data collection.

	Organization	Organization Type	Interviewee	Date
1	Rijkswaterstaat	Governmental National level	Civil servant	17-09-19
2	Consultancy company	Private	Co-creation expert	27-09-19
3	Architectural company	Private	Architect	10-10-19
4	Consultancy company	Private	Landscape designer	05-11-19
5	Water Reflection Group		Secretary-Ecologist consultant	06-11-19
6	Province of North Brabant	Governmental Regional level	Provincial deputy/politician	20-11-19
7	Waterboard Brabantse Delta	Governmental Local level	Councillor-board member	28-11-19
8	Waterboard Brabantse Delta	Governmental Local level	Project manager	28-11-19
9	Overdiepse Polder Interest Group	Non-governmental Local level	Farmer who left the polder	30-11-19
10	Overdiepse Polder Interest Group	Non-governmental Local level	Farmer who stayed in the polder	30-11-19
11	Utrecht University	Academic	Water expert	03-12-19
12	Province of North Brabant	Governmental Regional level	Project manager	03-12-19
13	Province of North Brabant	Governmental Regional level	Project manager	06-12-19

## Appendix B

**Table A2.** List of interview questions.

	Guiding Question	Aspects for the Case Study
1	What was your role in the project and when did you take part in the project—which phase, years?	Co-creation process; role of stakeholders
2	What were the main milestones that you could identify in the project during your participation?	Project background; co-creation phases
3	Who were the other stakeholders involved in the process?	Project background; role of stakeholders; co-creation phases
4	How did the communication between the various stakeholders take place—were there conflicts among them due to conflicting interests, stakes—were these solved, how?	Co-creation process; co-creation phases
5	What were the types of activities that fostered the communication/collaboration between the stakeholders?	Co-creation process; conditions for co-creation
6	When and how was this room for cooperation created?	Co-creation process
7	What are in your opinion the crucial aspects that favoured the co-creation process with the various stakeholders and the development and implementation of the terps plan?	Co-creation process; conditions for co-creation

## Appendix C

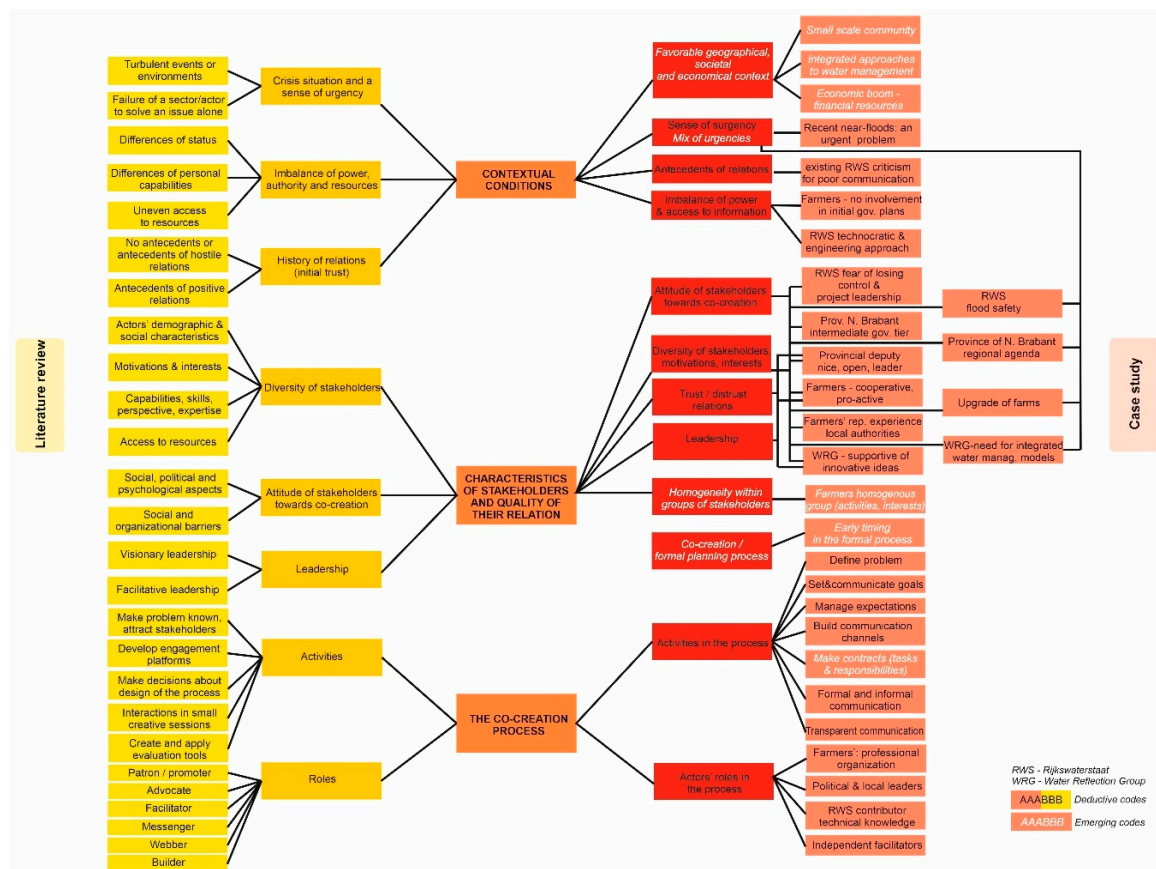


Figure A1. Coding tree.

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