Inter-Organizational Co-Creation

An Approach to Support Energy Transition Projects

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DOI
10.1007/978-3-030-60139-3_11

Publication date
2021

Document Version
Final published version

Published in
Research on Project, Programme and Portfolio Management

Citation (APA)
Jalali Sohi, A., Rikhtegarnezami, M., Bakker, H. L. M., & Hertogh, M. J. C. M. (2021). Inter-Organizational Co-Creation: An Approach to Support Energy Transition Projects. In R. Cuevas, C.-N. Bodea, & P. Torres-Lima (Eds.), *Research on Project, Programme and Portfolio Management: Integrating Sustainability into Project Management* (pp. 151-166). (Lecture Notes in Management and Industrial Engineering). Springer. https://doi.org/10.1007/978-3-030-60139-3_11

Chapter 11
Inter-Organizational Co-Creation: An Approach to Support Energy Transition Projects

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Abstract Societal challenges such as climate change and inefficiency of energy systems more and more crave for a sustainable environment. Research proved that restructuring energy systems into more sustainable forms, called "Energy Transition", has faced challenges. How to deal with these challenges requires the co-creation between various actors with multiple disciplines, expertise, and perspectives from different organizations. The research question to be answered here is whether co-creation helps the interaction between different actors in an inter-organizational project for the sake of better project results. By doing case study research in the Netherlands, an example of co-creation project in its front-end phase was investigated regarding the interaction among different actors involved in the project. The research revealed that in the case of a co-creation project the multiple actors collaborate across organizational boundaries in order to unite. This leads to a better solution-finding approach. Openness, trust and respect are valued more in co-creation. Moreover, the project team is better integrated to work towards a shared interest which are social benefits. The co-creation facilitated the data-sharing among the key actors in the project which traditionally is influenced highly by the mother-organizations' culture. Further research will investigate the transition in organizations to support the co-creation approach.

Keywords Energy transition · Co-creation · Inter-organizational projects · Collaboration

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R. Cuevas et al. (eds.), *Research on Project, Programme and Portfolio Management*,
Lecture Notes in Management and Industrial Engineering,
https://doi.org/10.1007/978-3-030-60139-3_11

11.1 Introduction

The Dutch ministry of Economic Affairs and Climate Policy in 2016 had the ambition of transitioning towards a low-carbon energy economy that is safe, reliable and affordable. The strategy for the energy transition includes focusing on reduction of CO_2 emissions, supporting innovation and seizing economic opportunities, integrating the energy transition into spatial planning, introduction of energy functionalities, and last but not least to further develop the strategy through "energy dialogue with the public, businesses, NGOs and government authorities". The coalition agreement of the Dutch cabinet in 2017 set the national strategy on 49% CO_2 emission reduction by 2020 while the international strategy aims at 55% CO_2 emission reduction [42]. This difference between the objectives of the Netherlands compared to Europe ignites the necessity of speeding up the energy transition in the Netherlands to reach the European Union goals.

The Dutch National Research Agenda as a source of inspiration for scientific developments for the direction of societal challenges for society in future offers 140 overarching scientific questions in 16 divers directions [11]. In line with the move towards energy transition one of those 16 directions is dedicated to energy transition. The purpose of the research is to build a sustainable and secure energy supply and a strong, green knowledge-based economy. It is believed for such an energy transition an integrated approach is required which addresses technical, social, economic, legal and spatial challenges that allow excellent building blocks to be implemented quickly and on a large scale [11].

The energy transition may have effects on many businesses and innovation strategies both locally and globally. It certainly questions the survival of companies like Shell which works on extraction and an executive refinement of fossil fuel if the world transitions to lower carbon energy production and consumption. Chad Hollidays from Shell claims that Shell has a flexible strategy to keep in step with the changes in the energy system [37]. It can be argued that all the businesses which rely on fossil fuel feel the societal urgency for sustainability purposes.

Although energy transition is a goal, the performance of those projects are not promising based on research [22, 33, 45]. It was understood that energy transition is a global goal. However, it has faced challenges in the countries who start moving to reach those goals. For example, German renewable energy cooperatives struggled as market collapsed as cited by Buchsbaum [8]. He claimed that the industry is paralyzed by the downwards pressure on onshore wind energy expansion. Another example is in The Netherlands. As reported by Netherlands Energy Research Alliance (NERA) energy transition has faced a number of challenges such as clean and flexible industry, intelligent energy systems, the Dutch transition in a global context and dealing with variation [30]. NERA Stated that, in order to support the energy transition, the cooperation in the market is required [2]. This cooperation can be realized between the policymakers, infrastructure asset owners and the cooperating countries in the energy transition agreement. However, the facts and figures reported by the European Commission show that the international transition is lagging behind of

what has been targeted as interconnection capacity [13]. Therefore the cooperation between the actors in energy transition plays an important role in goal achievement of the energy transition.

By studying the challenges of energy transition in Germany, Pegels et al. [33] stated that energy transition needs a formation of transformative alliances to be successful. In their viewpoint alliances will need to go beyond conventional boundaries. They believe that success of a transformation alliance is dependent on a platform of employment, competitiveness and innovation.

Insufficient supporting infrastructures is one of the main challenges energy transition has faced [10]. When it comes to realization of infrastructure, there is no single organization or authority responsible but numerous actors are involved. This becomes even more important when it comes to international energy transition. In a study about electricity production (high voltage direct current) in energy transition Pierri et al. [34] cited three categories of challenges: technical, economical and social, and environmental challenges. They propose that a solution to solve the challenges and achieve an agreement is the strict collaboration between existing associations and involved actors like energy companies.

Blanchet [5] studied the governance of energy transition projects in Berlin. He mentioned that energy transition will need transition management in regard to socio-technical transitions. Based on the research he claimed that the inclusion of local stakeholders, creating common interest through framing, familiarizing the public with the issue through forums and advertising are the strategies in energy initiatives. Heiskanen et al. [19] studied the emergence of sustainable energy transition from the perspective of two main energy companies in Finland. They found that new forms of collaboration are emerging within the coalition for energy transition. This new form of collaboration requires the combination of actors working together for a joint purpose.

It became clear that energy transition is “a must” for societies for sustainability purposes. It is also evident that the road to achieve energy transition is not as smooth as it was hoped for and there are challenges to achieve the set objectives. One main challenge is the collaboration of different actors in energy transition projects. Talking about “different actors” the focus is on inter-organizational collaboration where different organizations come together for a shared interest, in this case energy transition. Collaboration has different forms and co-creation is one of them. In this research a closer look has been taken to an example of a co-creation energy transition project. The objective of the research is to study how different organizations in an inter-organizational setting co-create to achieve a set goal.

In the paper Sect. 11.2 elaborates on the literature review regarding the concept of collaboration. Section 11.3 elaborates on the research methodology. The research results are presented in Sect. 11.4. Sections 11.5 and 11.6, respectively, cover the discussion and conclusion of the research.

11.2 Literature Review

In Sect. 11.1 it was argued that energy transition is a necessity for the modern society to overcome some societal challenges regarding sustainability. It was also mentioned that energy transition is not possible without a good collaboration between different actors such as client organizations, energy companies and NGOs among others. This section aims at providing a background study on collaboration. Further, this section explains what it is meant by inter-organizational projects.

Collaboration is an universal activity in modern societies and is recognized as a promising approach to address organizational and societal problems [17]. The word of collaboration is originally derived from the Latin word *collaborare* that means "work with" [18]. Different scholars provide different definitions of collaboration. Collaboration has been defined as the interdependent work of people together to achieve a greater interest and goal than they can attain individually [25]. According to Lu et al. [25], collaboration means: "*any effort to collaborate to exchange information, ideas or useful resources necessary to create a shared understanding for a common and creative purpose*". Based on the definition of Bryson et al. [7], collaboration is "*the process intended to foster sharing that is necessary among involved or affected groups or organisations in order to achieve the collective gains or minimise the losses*". Gray [16] proposed the definition of collaboration in her book as a process through which "*parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible*".

Various individuals are involved in collaboration and joint their efforts in order to obtain mutually desirable goals [6]. Collaboration is considered in the literature as an umbrella term for alliancing, networking, joint ventures and partnering [20].

There are other terms such as cooperation and coordination that sometimes interchangeably have been used by practitioners or in literature. McNamara [27] identified the differences between collaboration and other forms of working together—such as cooperation and coordination. According to him, while cooperation put the emphasis on individuals, coordination acknowledges the relationships in team and collaboration is centred by the relationships.

Collaboration creates long-term relationships through the involvement of participants which lead to greater innovation to achieve common goals [23]. In addition, close collaboration results in decreasing lead-time and improve quality in design and development [28]. Azari and Kim [1] recognized the parameters that have an effect on the quality of collaboration in the construction projects as accountability, commitment, communication, compatibility, timely involvement, joint operations, mutual respect and trust. The council of administrators of special education make a list of recommendation for collaboration [23]: listen to each, fully understand alternative opinions and perspectives, find and work from common ground, try to elucidate concerns and expectations, respect other people's differences, make use of each other's strengths and expertise, discover alternative ideas or perspectives and work together to attain the best possible solutions.

The term collaboration is mainly used when different organizations/parties work together to achieve an objective together which is not achievable without collaboration. Based on who those parties are in any form of collaboration, different researchers found different factors of collaboration.

Previous studies on this subject have mainly concentrated on collaboration and the relationship between client and contractors [39], between the owner, design teams and contractors [38] and collaboration in project-based supply chains [24, 26]. However, inter-organizational collaboration in multi-client projects is less addressed in the literature. Hence, the focus of this research is on factors of collaboration in the form of co-creation in multi-client inter-organizational projects.

According to Jones et al. [21] an inter-organizational project: *"involves two or more organisational actors from distinct organisations working jointly to create a tangible product/service in a limited period of time"*. The main difference between an inter-organizational project and other forms of collaboration is the fact that projects are temporary [21] but not any form of collaboration is temporary. In case of inter-organizational projects, the project organization dissolves after achieving common goals. A wide range of industries such as advertising [15], construction [12, 46], biotechnology [36], computer [14], financial services [35] have applied this kind of joint working of various organizations. However, there are few frameworks of understanding the different kinds of inter-organizational projects [21].

By reviewing the literature it was concluded that collaboration can be generally defined as a working condition in which different actors come together for achieving a shared interest/goal while the achievement of the goal is impossible individually. It was discussed that collaboration is different than cooperation and coordination. Collaboration can be applied in different forms, however, at the end the purpose of collaboration is achievement of shared goals. Collaboration can be among any two or more parties such as client-contractor, contractor-subcontractor, contractor-supplier and many others. In this research the focus is on collaboration between different client organizations for energy transition purposes.

11.3 Research Methodology

The objective of the research is to study how different client organizations in an inter-organizational setting collaborate in the form of co-creation to achieve a set goal. The research question to be answered here is whether co-creation, as a form of collaboration, helps the interaction between different actors in an inter-organizational project for better project results. In order to answer the research question, a case study research [47] is performed. To gather information about the project two approaches were taken: document study and semi-structured interviews with the key roles in the project and parent organizations.

The interviews intended to get an insight about the soft factors of collaboration which were not possible to get from the document study. For sensitivity reasons the name of the project and interviewees were kept anonymous.

The project is about infrastructural objects (such as locks and sluices) in the Netherlands that are reaching end of their life cycle. The first possible solution is to replace these objects by new ones which will be designed again for another 100 years. However, in 100 years' time the same issue will raise that is faced now: replacement of objects. Therefore, there should be a more innovative solution which answers nowadays societal challenges. All these objects are owned, constructed, operated and maintained by different organizations. However, there are always one or two organization which is/are known as the asset owner. Most often these infrastructures are interconnected, meaning that replacement/renovation of one object has consequences for other objects as well. To come up with possible scenarios for the replacement of those objects the asset owners need to come together and collaborate to reach a better result.

Although the replacement of those objects is the current issue, the obligation for moving towards sustainable energy and CO_2 emission reduction asks for a more integrated approach towards energy transition. Hence, one of the possible scenarios would be the integration of replacement of those objects with energy transition projects.

The project was initiated with an open question to the public. So any interested party could join and brainstorm in finding a solution for this project. The fact that it was an open question to the public resulted in an integration of the project with energy transition goals. The initial idea was finding a solution for the replacement of those infrastructural objects. However, energy companies showed interest in the project which lead to integration of the project with energy transition purposes. Since the number of those infrastructural objects is big, it was decided to start with a pilot location.

The project is at its front-end phase. The front-end phase itself can be divided into sub-phases. In this case, the front-end was split into six sub-phases. The decision of splitting the phase into six sub-phases was made to extend the process with more clear stage gates. The first phase of the project was mainly brainstorming for ideas to solve the current issue (replacement of infrastructural objects which are at the end of their lifecycle). This phase was the opportunity framing phase where different scenarios were developed as possible solutions. The integration of energy transition into the basic project purpose was initiated in this phase. In phase two the project team focused on less scenarios (funnelling the ideas) from the perspective of the asset owner and the energy company. The output of phase two was the business case document and technical design at a high level. Therefore phase two focuses on answering the question on generic and local level (technical, legislation, rules, etc.) in a form of a business case. Phase three is about making a plan for specific location (pilot location). Phase four is about preparing for the project with detail design. Phase five is then executing it and phase 6 is evaluating and turning it into a form of standard which can be applied and repeated in other locations.

This project fits well with the definition of an inter-organizational project since there is more than one organization involved (the asset owner and the energy company). Moreover, there was a common goal for the involved parties in the project.

Table 11.1 Interviewees functions

	Function	Project/parent organization
Interviewee 1	Investment manager	Project
Interviewee 2	Project leader	Project
Interviewee 3	Process manager (secratory)	Project
Interviewee 4	Senior adviser	Project
Interviewee 5	Adviser	Parent organization
Interviewee 6	Project manager innovation (energy transition)	Parent organization
Interviewee 7	Strategy director	Parent organization

The common goal here was the social benefit. The emphasis should be put on the total social benefit while not threatening each other's interests.

In total seven interviews were performed: 4 at project level and 3 at the parent organizations. Table 11.1 presents the interviewees' profiles. All the interviews were transcribed. Then by coding the relevant key words (collaboration, cooperation, co-creation, team integration, project team) the relevant parts were extracted. By qualitatively analysing the data, the perception of collaboration and the factors of collaboration were extracted. By doing a desk research on project documents also the factors of collaboration (in this case co-creation) were extracted. After compiling the results of interviews and desk research the final list of collaboration factors was concluded. Section 11.4 elaborates on the research results.

11.4 Results

At first instance, it is important to explore what the project team perceives as collaboration. Interviewees were asked to provide their definition of collaboration (Table 11.2).

Some general dimensions of collaboration mentioned by the interviewees are (1) setting a common goal (2) working together (3) shared interest over individual interests (4) horizontal network structure and (5) openness in communication. While practitioners perceived collaboration as working together towards a common goal, they perceived co-creation as creating a new thing by working together. Thus the difference between collaboration and co-creation is mainly about creativity and innovativeness in creating something new.

Although most of the interviewees interpret co-creation as a form of collaboration, still some believe that co-creation goes beyond the collaboration. Interviewee 3 perceives collaboration different than co-creation by pinpointing it to the contract: binding the parties, hierarchy and expectations from each other. She believes that the emphasis in co-creation is on creating something new which makes it different than collaboration, although "working together" is a pre-condition for both collaboration and co-creation. Innovativeness and creativity is mentioned often as the keys

Table 11.2 Definition of collaboration by interviewees

Interviewee	Definition of collaboration/co-creation
Interviewee 1	Collaboration in this field is co-creation. Collaboration is having discussions about the way to co-create with each other. The output of discussion will be published
Interviewee 2	Collaboration is working together, not putting anybody's interest first, but jointly looking for shared interest
Interviewee 3	Co-creation is to create something new in a group working together with no boss (hierarchy), expectations and contract binding
Interviewee 4	Collaboration is about being open in communication
Interviewee 5	Collaboration is having a mutual goal and try to achieve it together
Interviewee 6	Collaboration is being able to take and to give in the search of reaching the common goal
Interviewee 7	Collaboration is about "why" and not "how". Recognition of public values and being clear how to achieve it

for co-creation. The project leader from the energy company believed that the word co-creation is the same as collaboration and people use it if they want to give collaboration more flavour. However, after working in a co-creation team, he mentioned that co-creation might have a particular meaning compared to collaboration although to him both concepts are the same. Interview 2 mentioned that in collaboration you need to form a team which it has a kind of identity. That identity keeps the team together towards a goal rather than a group of people from different organizations sitting at the opposite side of the table.

In the co-creation of an inter-organizational project the project team set some basic principles of co-creation. The purpose of doing so was to make it clear for the participants in the project what to expect from co-creation. The principles helped the team to have a clear picture of the process. Table 11.3 presents those basic principles.

Table 11.3 The basic principles of co-creation in the case study project

Basic principles for co-creation in general
Full Transparency
Joint search for joint steps
Respecting each other
Defining the playing field
Thinking of possibilities
Setting clear goals
Ensure the direction; control of the process
Providing room/space for everyone
Take care of each other
Knowing and respecting each other's interests
Apply network organization rules

Table 11.4 Positive and negative aspects of co-creation recognized by the project team

Positive aspects	Negative aspects
Setting multiple challenging goals	Assuming that the outcome for the asset owner is fixed
The right of the initiators	Presentation does not reflect the reality
Sharing the knowledge and skills that are needed, in a timely manner in the process	Keeping only the related content for the asset owner (exclusion)
Dedicating time and space	Having a tunnel vision in the process
Give each other incentives	Lack of space
Make the interests clear	Thinking in problems
Helping each other in the thinking process	Hidden agendas
Being able to make personal contribution	No equivalence of values
Achieving success, progress and energy (in process)	Abuse
Working towards social values	Continuous process discussions
People, Planet and profit	No added value
Motivation, intrinsic values	

As can be seen in the table, the basic principles are meant for better alignment of the team and understanding of co-creation. The emphasis was put on equality in the team by, for example, "knowing and respecting each other", "network organization" and "goal setting".

Those basic principles of co-creation could lead to some specific positive or negative aspects as recognized by the project team at the early stage of the project (phase 1). Table 11.4 elaborates on the identified positive and negative aspects of the co-creation.

By comparing the identified positive and negative aspects of co-creation it can be argued that the positive aspects are mainly about the integrity of the team as a single unit focusing on a shared interest. However, the negative aspects stress the tunnel vision and the situation where there is no essence of collaboration and innovativeness because of being restricted to presumptions. Those presumptions hinder the collaboration. For example, "hidden agendas" is a threat to openness and trust. "Exclusion" of any parts in the project without being open about it also threatens the trust and consequently the collaboration. Thus, the negative aspects should be avoided and recognized in the early stages of the project in order to achieve a successful collaboration.

Apart from the basic principles of co-creation, the interviews resulted in gathering a list of factors which influence the collaboration. Table 11.5 presents the factors of collaboration.

By analysing the factors mentioned by the interviewees for collaboration it can be said that most of the factors contribute to soft aspects within project team such as trust, sympathy, respect, team spirit, top management support, people over instructions, commitment and equality among the actors in an inter-organizational project. The second category of factors is related to project management like setting a clear goal,

Table 11.5 Factors of collaboration in inter-organization project identified by interviewees

	Factors of collaboration	Frequency of being mentioned by interviewees
1	Interested and enthusiastic people	2
2	Trust	2
3	Curiosity	2
4	Common goal	2
5	Working together	2
6	Common ground	2
7	Shared understanding from each other (get to know each other)	2
8	Support from the top management	2
9	High team spirits (having fun)	2
10	Make an integral business case	1
11	Sympathy	1
12	Respect	1
13	People over instructions	1
14	No monetary influence	1
15	Joint agenda	1
16	Commitment	1
17	Stable team	1
18	No restrict division of functions	1
19	Open knowledge sharing	1
20	Horizontal organization (no hierarchy)	1
21	Clarity of the goal	1
22	Clear communication	1
23	Early involvement of stakeholders (depending on every stage of the project)	1
24	Contractual agreement	1
25	Loose of ownership	1
26	Iterative progress	1
27	Equality (everybody has a voice and should be heard)	1

joint agenda's, integral business case and contractual agreements. The third group of factors is those which are related to processes such as clear communication, open knowledge sharing, and early involvement of stakeholders. The last identified group of factors are those which contribute to team structure such as stable team and horizontal organization.

One of the interviewees mentioned that in co-creation we are not anymore parties but people who sit together around the table as a team. This observation reflects on the integration of team rather than separated organizations around the table. Another interviewee supports the idea of integrated team by mentioning that in a co-creation

project environment everybody is the same in the team. This means that there is no priority/importance given to any sort of hierarchy in the project organization. That is why the horizontal project organization is mentioned as a factor of inter-organizational collaboration.

One of the factors of inter-organizational collaboration mentioned by interviewees was "getting to know each other". One of the team members in reflecting about the co-creation process stated that: "I am positive about the fact that the project team made so much progress although it was made of people who didn't know each other before. The vision of others helped shaping our own ideas". This means that even though the project team didn't know each other before, the co-creation process enhanced the collaboration among them which resulted in good project progress. Interviewee 2 mentioned: "you need to get to know each other in order to see what kind of plans fit both interests". He believed a common knowledge about the project is required for better understating of each other.

The interaction among team members is reflected in project documents. There was an observation by a team member that as learning point we should listen better to each other. Another team member supports this idea by mentioning that there should be a balance between listening and speaking.

"Transparency" was mentioned as a factor of inter-organization collaboration. Interviewee 3 supports this factor by saying that "in co-creation everybody sits in the team for the public good. In this case nobody was allowed to keep information behind".

Apart from the positive side of co-creation there were also negative aspects observed by the team. A team member said that there was a "structured chaos" way of doing things in some meetings. When different people with different backgrounds come together without any structure, only the last five minutes would be spend on the core subject. This observation by the team member is interpreted by the researchers as inefficiency of meetings in co-creation. Regarding the chaos another team member said: "as long as chaos is intrinsically motivated, it will lead to success". Therefore, it can be argued that there is some structure needed in a co-creation process to increase the efficiency. Another negative aspect observed by an interviewee was the existence of "group thinking". Interviewee 2 mentioned that "group thinking" is a drawback of group meetings until somebody starts criticizing the idea. Then everybody starts questioning the progress.

Regarding the importance of having a stable team for a co-creation project one of the interviewees mentioned: "the team should be stable. You can't have people running in and out all the time because you have to build knowledge". The importance of knowledge remaining in the team by establishing a stable team is also highlighted in literature about Agile project management [3].

11.5 Discussion

The first topic which was explored in this research was the perception of collaboration. It was revealed that almost all interviewees perceived collaboration as working together to achieve a common goal. Interviewee 2 mentioned that to achieve the social good (common goal) the parties should always comprise their benefits. This highlights the importance of interaction among the involved actors in the inter-organizational collaboration project.

Explaining the perceptions, interviewees mentioned "contract" as a factor which can affect collaboration. Collaboration can be realized in form of co-creation. The first observation made was that although all interviewees have a clear picture of co-creation, not all of them see the collaboration and co-creation as the same concept. For example, interviewee 3 believed that in collaboration there is a contract which plays an important role while in co-creation there is no contractual agreement. Literature also supports the fact that collaboration is affected by contractual agreements [40]. Co-creation in literature is when the customer also takes a role in creating the value [32]. According to research [32] the development of relationships between two actors is based on interaction and dialogue. Mele [29] states that value should be co-created rather than created by the service provider for the customer. By a literature scan it was concluded that most of the literature on co-creation has looked into the relationship between customer (client) and providers (suppliers) [29, 32, 44]. This research concludes that co-creation hasn't been studied in the context of multi-client inter-organizational projects.

Collaboration has been studied by different researchers [4, 9, 31, 39, 41, 43, 48]. However, collaboration in multi-client inter-organization projects has not received much attention among scholars. Hence, in this research the secondary objective was to explore the factors of collaboration which are recognized by practitioners in case of an inter-organizational project. in total 27 factors of collaboration were identified. Most of the factors contribute to soft factors of collaboration. This can strengthen the idea that the motives of collaboration are soft aspects of project management and not hard aspects such as contracting. Also it was evident that team related factors such as "transparency", "respect", "trust", "enthusiast people", "commitment" and "high team spirit" get the highest attention among the practitioners.

Comparing the identified factors in inter-organizational collaboration in this research with the factors of other forms of collaboration in literature [39] it can be concluded that factors of collaboration are mostly the same, no matter what form of collaboration it is and between which two actors in the project. Suprapto et al. [39] identified different categories of collaboration factors between client and contractor such as relational attitudes, collaborative practices, joint capabilities and teamwork quality. Relational attitudes include factors such as management support and commitment, valuing each other's interests. Collaborative practices include items such as formal integrated project team, goal setting, joint decision-making among others. Joint capabilities are about competences and experiences of actors in collaborative

relationship. Teamwork quality is about factors such as communication, coordination and cohesion, affective trust, aligned effort and balanced contribution. By comparing these collaboration factors and the identified factors in this research it can be concluded that the joint capability items were not recognized by practitioners regarding the collaboration in multi-client inter-organizational projects. The rest of factors show a huge overlap.

By studying the collaboration in a multi-client inter-organizational project a few managerial implications can be drawn from this research. First of all, collaboration is highly influenced by the shared interest of actors rather than contract. This helps practitioners by putting more emphasis on the people side of the project rather than contracting. Secondly, the recognition of collaboration factors in the context of multi-client inter-organizational projects helps practitioners empower their collaborative relationships to reach mutual goals for the society.

The scientific contribution of this research is bridging the gap in literature regarding the perception and the factors of collaboration in a multi-client inter-organizational context. For the successful delivery of inter-organizational projects the collaboration between different actors is required. However, the collaboration between multiple client organizations has not been studied thoroughly before. This collaboration is of a bigger importance in case of energy transition projects where the achievement of project goals goes beyond the contribution of a single client organization.

11.6 Conclusion

Literature suggests that new forms of collaboration are required for energy transition projects [19]. In most cases the energy transition projects are not possible to be executed without inter-organizational collaboration. It is inherently inter-organizational since the scale of complexity of energy transition projects is on one hand beyond the capabilities of single organizations and on the other side the energy transition projects are most often interconnected infrastructure projects where different organizations are involved. Therefore one of the characteristics of these types of innovative projects is being inter-organizational. It was also evident that energy transition projects face challenges. Overcoming the managerial and social challenges is impossible without a good collaboration between the actors of energy transition projects. In this research a closer look was taken to a case study where energy transition goals were integrated with the initial goals of project (replacement of old infrastructure projects). In order to realize a good collaboration, this project was run as a co-creation project which is recognized as a form of collaboration. The research revealed that co-creation is a form of collaboration where the focus is more on innovativeness and creativity for finding a solution for a societal challenge. Therefore the factors of collaboration apply to co-creation context such as “shared interest”, “common goal”, “transparency”, “openness”, “respect” and “trust” among others. It was evident that soft factors of collaboration play important roles in the

success of collaboration as they were more recognized by the practitioners than hard factors such as contractual agreements. The integration of project the team is identified as one of the main characteristics of co-creation. The existence of the identified collaboration factors does not guarantee the existence of collaboration. However, the nonexistence of those factors hinders the existence of collaboration in inter-organizational projects. This leads to the first managerial implication of this research which is recognition and implementation of collaboration factors in the context of inter-organizational energy transition projects. The scientific contribution of this research is bridging the gap in literature regarding the concept of multi-client inter-organizational collaboration. Further research can focus on the effect of identified inter-organizational collaboration factors on project success. Also this research can be the starting point for further research investigation in transitions in organizations to support the co-creation approach.

Acknowledgements This research is funded by Netherlands Organization for Scientific Research (NWO).

Compliance with Ethical Standards

This research has been performed under the permission of Delft University of Technology (reference number 439.16.804) and it is funded by Netherlands Organization for Scientific research (NWO). The research has been done with respect to Delft University of Technology regulations on research Integrity code of conduct. The ethical approval of the research has been issued and signed by Dr. Ir. Udo Pesch as the chair of Human Research Ethical Committee at the Delft University of Technology.

All the interviewees participated in this research were informed about the purpose of the research and publication. They all agreed on participation. All the data such as the names of interviewees, projects and involved organizations for this research are anonymized. Moreover, the interviewees were informed about the anonymization of the data prior to their participation in the research.

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